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# IG JUNIOR HIGH SCHOOL RCES 1978 SCIENCE

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Learning Resources Officer

Rod E. McConnell



## USING "LEARNING RESOURCES" FOR JUNIOR HIGH SCHOOL SCIENCE

*This manual is intended to provide a listing of materials (print, videotapes and film) readily available to the teacher. Due to the time factors involved, it is not intended to be an exhaustive compilation.*

*The materials have been "matched" with the grades and concepts as closely as time and other resources would allow. New materials will be added and some deleted via new pages which will be made available by Alberta Education.*

*You are encouraged to utilize materials to be found at the local level. However, please refer to "IMPORTANT GUIDELINES" in the Junior High School Science CURRICULUM GUIDE, page 12, for more information in this respect.*

*If you locate materials which you feel would be of benefit to others, you are encouraged to forward the information on these to Alberta Education. A form has been specially prepared for this purpose: the "Teacher's Recommendation for Inclusion" form which appears on page 7. Your assistance in helping us upgrade and update the listings will be much appreciated, not only by us but by other teachers in the field as well.*

*Another form which may be of use in upgrading the listing is the "Teacher's Recommendation for Deletion" form which is found on page 9. If for any reason you feel that an item should be deleted, please fill in this form and send it to the undersigned Learning Resources Officer.*

*You may note that the many items previously available through the Audio Visual Services Branch of Alberta Education have not been included. This is due to the fact that the Audio Visual Film Library has been decentralized throughout the province and now (as of August, 1978) resides in four Regional Film Libraries. (See page 17 for locations.)*

Teachers are asked to refer to these libraries if the school in which they are teaching is serviced by one of the libraries.

This publication lists material which is available through various departments of government, private publishers and the ACCESS Media Resources Centres as well as the Extension Department of the University of Alberta. When using this listing, please ensure that requests are directed to the appropriate agency. Publications, unless noted otherwise, may be ordered from the publishers or School Book Branch if a prescribed reference. Videotapes are to be ordered from the indicated agency, usually the ACCESS MEDIA RESOURCE CENTRES. Film is to be ordered from the Department of Extension, University of Alberta. Check the separate information sections on each medium.

As this is the first effort at supplying a listing of materials directly linked with curricular concepts, the listing is necessarily sparse in certain areas. However, it is hoped that this will be rectified over time with the cooperation of all involved.

Rod E. McConnell  
Learning Resources Officer (Science)  
Curriculum Branch

## LEARNING RESOURCES KIT

The Curriculum Branch, in cooperation with other government agencies, has prepared a Learning Resources Kit for the junior high school science teachers.

Comprised of printed materials from the following agencies, the kit will provide many useful pieces of information. Contributing agencies are:

Agriculture Canada  
Alberta Energy and Natural Resources  
Alberta Environment  
Environment Conservation Authority

An attempt has been made to provide the latest available information on each of the chosen areas. However, in many cases, the publications are in short supply. As a consequence, some items may not be available in kits ordered at a later date. Teachers are urged to order kits (at least one per school) at their earliest opportunity to ensure as complete a kit as possible. Teachers should also note that two publications from Alberta Energy and Natural Resources, "The Vital Two-Thirds" and "The First Harvest," both included in the kits, are complemented by videotape programs of the same name. See page E7.2 - V-2. Please request your dubs of these programs from the ACCESS Media Resources Centre.

Kits may be ordered by requesting a *LEARNING RESOURCES KIT for Junior High School Science* from the following address:

The School Book Branch  
10410 - 121 Street  
Edmonton, Alberta T5N 1L2

Please note that the cost to cover handling and shipping is \$2.21 (\$2.60 - 15% discount). Individual teachers/schools must pay in advance. School boards may charge their orders.



## ORGANIZATION OF THE LISTING

This listing has been organized to meet several objectives:

- (a) ease of location of information for grade, core or elective area and concept number;
- (b) ease of location of media type--print, video or film, dependent upon (a);
- (c) insertion and deletion of information for periodic updating.

The information for each grade is outlined as follows:

### Grade number title page

#### Prescribed Reference Annotations (PRA)

These pages contain brief annotations of the prescribed references for each grade plus additional textual resources and teacher references. Pages are numbered as follows: grade number - "PRA" designation - page number. E.g. 7-PRA-1.

### Core concept area title page

#### Core concept information area

This area is arranged by concept numbers with subdivisions of print "P", video "V", NASA video "V(N)", and film "F". The specific core concept wording and number (as per the *Curriculum Guide*) is printed at the top of each first "Print" page--the first page of each concept section. Pages are numbered in the following manner: E.g. C7.1 - V(N)-1.

C = core concept area

7 = grade

1 = concept number

V(N) = NASA videotapes

1 = page one of V(N)

The page number may be read as "core area of grade 7, concept number 1, NASA videotapes, page 1."

### Local Resources Listing

A page is included on which teachers may list local resources from their libraries, media centres, or regional film library that apply to that particular concept level.

### Elective concept area title page

### Electives concept information area

This is organized in the same manner as the core area, except the "C" designation is changed to "E".

### Local Resources Listing

A Local Resources Listing has been included at the end of each elective concept section as well.

Thus, the teacher is able to locate information by grade, core or elective, concept number and medium format just by flipping through the lower right-hand page numbers in the listing.

The information on each concept may be updated in any of the three media formats separately without affecting any other sections.





TEACHER'S RECOMMENDATION FOR INCLUSION

I wish to recommend the following material for inclusion in the Junior High School Science LEARNING RESOURCES listing:

1. PRODUCER INFORMATION

Producer's Name: \_\_\_\_\_

Producer's Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Postal Code: \_\_\_\_\_

2. MATERIAL DESCRIPTION

Title: \_\_\_\_\_

Series Title (if any): \_\_\_\_\_

Date of Production: \_\_\_\_\_ Cost: \_\_\_\_\_

Type of Material (videotape, text, etc.): \_\_\_\_\_

\_\_\_\_\_

Material Format (1/2-inch, etc.): \_\_\_\_\_

\_\_\_\_\_

Is the material contained in a kit? Yes \_\_\_\_\_ No \_\_\_\_\_

3. MATERIAL USE

Material was used for: Grade \_\_\_\_\_ Concept Number \_\_\_\_\_  
(refer to Curriculum Guide)

4. MATERIAL EFFECTIVENESS

Please indicate what aspects of the material you found to be most effective.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. MATERIAL INEFFECTIVENESS

Please indicate what aspects of the material you found to be particularly ineffective.

---

---

---

---

---

6. TECHNIQUE

Please indicate how you used the material with your students to achieve the maximum effectiveness.

---

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---

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---

7. MATERIAL RECOMMENDED BY

Name: \_\_\_\_\_

Address: \_\_\_\_\_

---

Postal Code: \_\_\_\_\_

Telephone: \_\_\_\_\_

=====

THANK YOU FOR YOUR TIME AND EFFORT IN HELPING US TO UPGRADE THE LEARNING RESOURCES LISTING. YOUR EFFORTS ARE MUCH APPRECIATED.

Please mail the above recommendation to:

Rod E. McConnell  
Learning Resources Officer (Science)  
Audio Visual Services Branch  
Alberta Education  
11160 - Jasper Avenue  
Edmonton, Alberta T5K 0L2

Telephone: 427 2943

TEACHER'S RECOMMENDATION FOR DELETION

I wish to recommend that the following material be deleted from the Junior High School Science LEARNING RESOURCES listing:

1. MATERIAL INFORMATION

Title: \_\_\_\_\_

Series (if any): \_\_\_\_\_

Catalogue Number: \_\_\_\_\_

LEARNING RESOURCES Page Number: \_\_\_\_\_

2. REASON FOR DELETION

Please list your reasons for wishing to have this material removed from the LEARNING RESOURCES listing.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. RECOMMENDED BY

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_ Postal Code: \_\_\_\_\_

Telephone: \_\_\_\_\_

=====

Please mail the above recommendation to:

Rod E. McConnell  
Learning Resources Officer (Science)  
Audio Visual Services Branch  
Alberta Education  
11160 - Jasper Avenue  
Edmonton, Alberta T5K 0L2

Telephone: 427 2943





## USING MEDIA IN THE CLASSROOM

When the teacher is using media in the classroom, he/she should consider the following:

(1) The media should be ordered in sufficient time to obtain them from the dubbing centres, learning resources centres, etc.

(2) Once obtained, the media should be previewed by the teacher. This allows the teacher the opportunity to decide how closely the program fits the curriculum and specific objectives which the teacher plans to meet. Previewing the program also enables the teacher to plan how he/she will actually use the program in the context of his/her class. Such variables as the suitability of the program for this or that specific class and the particular stage which the class has reached can be determined by previewing. The teacher may also find specific areas of the program which he/she will want to emphasize or downplay as the program is being run. There may be areas which the teacher will want to eliminate entirely. One could say that previewing is essential prior to the use of any material in the classroom.

(3) The use of media should be tied to specific objectives. The indiscriminate use of media will serve only to confuse the learner as to the objectives to be reached in its use. How the program is to be used will depend upon the individual teacher and his strategies. The teacher should indeed develop a strategy to be used with any particular piece of media. This strategy should take the greatest advantage of what the medium has to offer and at the same time maximize its impact.

(4) Any medium will have its greatest impact only if it is presented under a set of optimum conditions. The teacher should ensure that the best possible conditions for any particular medium are utilized. (E.g., Low noise levels for the use of audiotapes and the use of low light levels and reduced glare for the use of films or videotapes.)

(5) The use of the program should be planned so that there is to be some follow-up activity to support the program.

NOTE:

For more complete information on the choice and use of media in the classroom, refer to *Communication is Learning*, a manual for teachers and students, a copy of which has been sent to all schools in the province. More copies are available on request from:

Rod E. McConnell  
Learning Resources Officer  
Curriculum Branch  
Alberta Education  
11160 - Jasper Avenue  
Edmonton, Alberta T5K 0L2  
Telephone: 427-2943

Also refer to pages 12, 13 and 14 of the *Junior High School Curriculum Guide* for guidelines on the local selection of instructional materials, controversial issues and Department of Education policy.



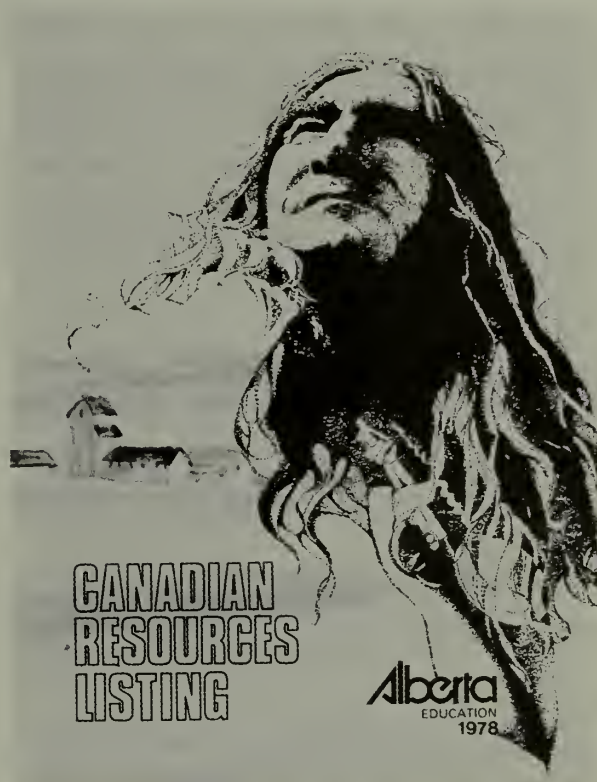
## CANADIAN RESOURCES LISTING

In August 1978 the latest edition of the CANADIAN RESOURCES LISTING, produced by Alberta Education, was shipped to the schools of Alberta.

Primarily designed for the Language Arts and Social Studies areas, the listing contains many items which may be of use to the Science teacher as well.

Please refer to the listings contained under the following headings in the index:

Agriculture .....	579
Conservation of Natural Resources .....	594
Ecology .....	598
Economics .....	599
Environment .....	603
Geography .....	615
Maps .....	644
Natural Resources .....	647
Outdoor Life .....	649
Pollution .....	656
Science .....	662
Teaching--Aids and Devices ..	668
Technology .....	672
Transportation .....	673



Note: In the event that this publication cannot be located in the school library, please contact the Social Studies or Language Arts teacher in your school.

## ORDERING FILMS

Department of Extension  
University of Alberta

All films listed in this section are available from the Department of Extension of the University of Alberta. This service extends throughout Alberta and includes many schools and other institutions. The films have been identified and included to enable those teachers who lack access to other sources of films, such as the Regional Film Libraries, to have a broader base of resource selection. This does not, of course, preclude the use of any film by others already serviced by the Regional Film Libraries. Film use in schools is restricted to ALBERTA ONLY.

The Department of Extension does have a service charge for the use of the films. The charge for schools is 75 percent of the rental value of the order or a minimum charge of \$2.50. The school will be billed for the use of the film.

As many others may be ordering the same film, it will be necessary to order well in advance and provide a list of alternatives. The Department does carry more than one copy of popular films, but this may not be enough to fulfill the demand. Please realize the demand that this listing may make on the library and be prepared to work on a first come, first served basis.

The Department provides its own catalogue which it sells at a cost of \$5.00. This includes materials dealing with a large number of subject headings. The school would do well to have a copy of this catalogue on hand. The catalogue is frequently updated with supplements.

When ordering films, please include the following information:

- the name of the school requesting the film(s)
- the correct address of the school and telephone number
- the title of the film and its catalogue number
- the date you are requesting it for (and alternative dates, if possible)
- alternative films that may still meet your objectives.

Orders may be sent to:

University of Alberta Extension  
Educational Media Division  
Room 132, Corbett Hall  
82 Avenue and 112 Street  
Edmonton, Alberta T6G 2G4

Booking Clerks: 432-5039  
432-5040  
432-4934

Bookkeeper: 432-5051

PLEASE ENSURE THAT THE FILMS YOU HAVE RECEIVED ARE RETURNED PROMPTLY AS OTHERS MAY BE WAITING FOR THEM.

NOTE:

The Department of Extension carries the complete line of NASA films which are available from the ACCESS Media Resources Centers. If you find that the film is necessary instead of the videotape for some reason, please do not hesitate to contact the Department of Extension for booking.

## USING THE FILM ANNOTATIONS

Please refer to the following sample annotation to obtain the information necessary when choosing and ordering film from the Department of Extension, University of Alberta.

### SAMPLE:

title	1. ANIMAL CLASSIFICATION	A1703	Dept. of Ext.
			catalogue no.
description of content	Introduction to animal taxonomy. The horse is used as a case study for describing the Linnean system of classification. Includes statements on the purposes of taxonomy and the reason for using Latin terminology. Summation done in reverse order, from species to kingdom, by hand painting that uses a free system for analogy.		
	Producer: C-B Films, 1962		
film length	11 min.	color	sound
			ejrsr
			\$2.50
			cost
			grade level

### NOTE:

The descriptions given in the annotation are meant to be descriptions only! Teachers should still preview materials prior to their use. Refer to "Using Media in the Classroom," page 11 .

Please note the following symbols and their grade level designations:

- e - elementary
- ue - upper elementary
- jr - junior high
- sr - senior high
- g - general
- a - adult
- c - college



## REGIONAL FILM LIBRARIES

Since 1975, the Audio Visual Services Branch of Alberta Education has been involved in the decentralization of its film library. As of August 1978, the following Regional Film Libraries have been set up. The Audio Visual Services Branch now provides limited service to only a few remaining schools. To locate films at a local level, please contact your local media person or, if your school is served by one of the following film libraries, you may wish to contact them for more information.

These Regional Film Libraries may have catalogues listing the films they have available to the areas they serve. Unless you are one of the schools served by the Audio Visual Services Branch, please contact the Regional Film Library or local Instructional Media Centre that is servicing your school.

Regional Film Libraries are currently operating in the following centres:

### Serving Zone 1:

Instructional Media Centre  
Peace River School Division No. 10  
P.O. Box 2157  
Peace River, Alberta T0H 2X0

Mr. Gerry Harrington  
IMC Coordinator

### Serving Zone 2 and 3:

Instructional Materials Centre  
Sherwood Park RCSSD No. 105  
2017 Brentwood Boulevard  
Sherwood Park, Alberta T8A 0X2

Mr. Dan Malone  
IMC Coordinator

### Serving Zone 5:

Calgary Public Library  
Central Library Building  
616 Macleod Trail S.E.  
Calgary, Alberta T2G 2M2

Mrs. Gail Yeoman  
Coordinator

Serving Zone 6:

Provincial Building  
200 - Fifth Avenue South  
Bag Service 3014  
Lethbridge, Alberta T1J 4C7

Mrs. Anne McGougan  
Coordinator

NOTE:

Prior to contacting any of the above offices, please ensure:

(a) that the office does indeed serve your school; (b) that your school has received a catalogue of films available from the library; (c) what films are available in your subject area in the catalogue; (d) what the conditions of service are. (Contact the media person in your school or local Instructional Media Centre for information on the local system.)

## FILMS: A MINI-GUIDE

(1) Order films sufficiently well in advance to allow for preview time and time to reorder if necessary.

(2) Preview the film prior to its use in the classroom.

(3) Decide if the film has any relevance to the objectives you have to meet.

(4) Decide the best possible way in which the film may be utilized.

(5) Decide what introduction the film will need and prepare the class for the film.

(6) Decide whether only parts of the film have any bearing on the objectives or whether the whole film is useful. Perhaps only parts of the film need be shown to meet the desired objectives.

(7) Decide on what follow-up activities, if any, are needed in order to maximize the film's impact.

(8) Note the effectiveness of this particular film. Decide whether or not the film is worth using again, or how the film may be better utilized the next time. (Use the "Notes" section with the annotations for further reference.)

## CARE OF THE FILM

(1) Ensure that only competent people operate the film projector.

(2) Always handle the film by the edges or the leader or tail, never by the images on the film itself. Otherwise, oils and dirt from the hands will adhere to the film, causing damage.

(3) Ensure that the leading edge of the film is cut straight across. It should not be ragged or torn, as this may create threading complications.

(4) Check the film periodically as it is being shown to ensure that it is running through properly and is being wound properly.

(5) Do not "cinch" the film to tighten it up on the reel. If any dust is present between the coils, scratches will appear on the film.

(6) Do not rewind the film upon completion (unless it is to be used again) as this facilitates the checking of the film when it is returned to the library.

(7) Keep the film in the protective can in which it comes.

(8) Store the film in an upright position in a cool room of average humidity.

## CARE OF THE PROJECTOR

(1) Ensure that the projector is run only by qualified people.

(2) Have regular check-ups on the machine to ensure that it is cleaned, lubricated and running properly.

(3) Learn the simple checks which ensure that the film is running properly, that the picture is focused, the image size is right for the viewers, and the film is being properly wound on the take-up reel.

(4) Lenses have to be cleaned periodically. This should be done only by people familiar with the technique. (Proper technique is usually found on packages of lens-cleaning tissue. Kleenex-type tissues should not be used as they will increase the chances of scratching the lens.

(5) The "gate" of the projector will have to be cleaned occasionally. If it is dirty, one will see lint appear on the screen with the picture. Learn how to clean this area--a simple procedure requiring little time but improving picture quality.

(6) Once the film is finished, the projector should be run for several minutes to allow the bulb to cool down. This prolongs the life of the bulb tremendously.

(7) Spare bulbs should be available with the projector at all times. The teacher or one of the students should be familiar with the procedure to replace the bulb in the event that there is a burn out.

(8) Cover the projector and store in a clean area when the projector is not in use.

(9) Avoid bumping the projector. This will help protect delicate optical and mechanical components.

# VIDEO

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## ORDERING VIDEOTAPES

### ACCESS Media Resources Centres

All videotapes listed, including National Aeronautics and Space Administration (NASA) videotapes, are to be ordered from ACCESS Media Resources Centres.

When ordering videotapes from the ACCESS Media Resources Centres, please observe the following conditions to ensure ease of processing to obtain the fastest service possible.

(1) Please do not send damaged tape, tapes of insufficient length, empty reels or tapes which were allowed to be stored uncovered. Tapes of insufficient length and, of course, empty reels that are accidentally mailed will result in incomplete orders. Please double check before mailing.

(2) Ensure that tapes do not get damaged in the mail by wrapping them carefully in strong cartons. Never use paperfill bags, as these rip easily, contaminating the tapes with dust.

(3) Please rewind the tape to the beginning of the program before mailing to the dubbing center.

(4) Please avoid "rush" orders. At the present time, the turn-around time from the dubbing centre is approximately four weeks. Orders must be in writing only, as telephone orders frequently result in errors and re-dubs. Please mail your order, tapes and purchase order under one cover, if possible, thus eliminating confusion and delay. A sales tax exempt number, along with the purchase order, is necessary when ordering new tape.



(5) Have only one program dubbed to one tape whenever possible. This not only facilitates dubbing, but also eliminates the time one has to expend when searching for the next program.

#### VIDEOTAPE PURCHASE FROM ACCESS

The following formats of videotape may be purchased from ACCESS Media Resources Centres:

1/2-inch cartridge:	30 min.	\$22.00
1/2-inch open reel:	30 min. (VR2)	\$ 9.00
	60 min. (VR3)	\$14.00
3/4-inch cassette:	30 min. (VC1)	\$13.00
	60 min. (VC2)	\$18.00

NOTE:

As ACCESS purchases videotape in bulk, specific brands of videotape cannot be supplied to the purchaser. Prices will vary according to the current market. (Prices listed above are those effective April 1978 and are current as of the date of this publication.)

All purchases must contain:

- a purchase order
- a purchase order number
- a statement of federal tax exemption

NOTE:

Please ensure that you are ordering videotape of the correct format for the machines on which you plan to use the tapes.

## VIDEOTAPE FORMATS THAT MAY BE ORDERED

As schools throughout the province have purchased VTR's which operate on different formats, the ACCESS Media Resources Centres provide dubbing on the following formats:

1/2-inch cartridge --Panasonic format  
--Phillips format

1/2-inch open reel --Sony CV series format (non-EIAJ)  
--Sony AV series format (EIAJ)  
--Panasonic format (EIAJ)

(Note: All EIAJ format machines are compatible, regardless of the manufacturer's brand name.)

1-inch open reel --Sony 320 format  
--Ampex format  
--IVC format

2-inch open reel --Sony PV-120 format

### ACCESS Media Resources Centre Locations

Calgary: ACCESS Media Resource Centre  
1611 - 29 Street N.W.  
Calgary, Alberta T2N 4J8  
  
Telephone: 283-8241

Edmonton: ACCESS Media Resource Centre  
16930 - 114 Avenue  
Edmonton, Alberta T5M 3S2  
  
Telephone: 451-3160

## USING THE VIDEOTAPE ANNOTATIONS

Please refer to the following sample annotation to obtain the information necessary when choosing and ordering videotapes from ACCESS.

### SAMPLE:

title	1. ECOLOGY, YOU AND YOUR ENVIRONMENT: BROWN INCIDENT	132203	ACCESS no. (use when ordering)
description of content	A humorous sketch involving Farmer Brown, a worm and a reporter is used to illustrate the dangers of land misuse and to show that soil is the most critical substance in our environment.		
	Producer: Ontario Educational Communications Authority, 1972?/Sept. 1978		
series title	Series: Ecology, You and Your Environment		production/ deletion dates
	20 min.	color	sound uejr
program length			grade level

### NOTE:

The descriptions given in the annotations are meant to be descriptions only! Teachers should still preview materials prior to their use. Refer to "Using Media in the Classroom," page 11 .

Please note the following symbols and their grade level designations:

- e - elementary
- ue - upper elementary
- jr - junior high
- sr - senior high
- g - general
- a - adult
- c - college

## VIDEOTAPE: A MINI-GUIDE

(1) Order video programs sufficiently well in advance to allow for preview time and time to reorder if necessary.

(2) Preview the tape prior to its use in the classroom.

(3) Decide if the program has any relevance to the objectives you have to meet.

(4) Decide the best possible way in which the program may be utilized.

(5) Decide what introduction the program will need and prepare the class for the program.

(6) Decide whether only parts of the tape have any bearing on the objectives or whether the whole tape is useful. Perhaps only parts need be shown to meet the desired objectives.

(7) Decide on what follow-up activities, if any, are needed in order to maximize the program's impact.

(8) Note the effectiveness of this particular program. Decide whether or not the tape is worth using again, or how the program may be better utilized the next time. (Use the "Notes" section with the annotations for further reference.)

## CARE OF THE VIDEOTAPE

(1) Dispose of damaged tapes. These tend to damage the "heads" of the VTR and may lead to expensive repairs. Splicing damaged videotape is not recommended.

(2) Ensure that the tapes are placed on the VTR's in the correct manner. (Videotapes are recorded on one side only and are recorded the full width of the tape. Thus you may not record two programs on the same strip of tape. Two or more programs may be recorded consecutively, however.)

(3) Always rewind tapes after they have been used. This will result in less confusion and saves time as well.

(4) Keep tapes in their packages when the tapes are not being used. Store them in a cool place of average humidity, away from sources of magnetism. Magnetic influence tends to destroy the quality of the image and the sound track.

(5) Label tapes in a legible manner to provide ease of access and reduce confusion.

(6) Store tapes standing on edge to prevent warping.

## CARE OF THE VIDEOTAPE RECORDER:

(1) Ensure that the videotape recorders are operated by qualified personnel only. What may appear as a minor mistake may result in costly repairs. If you are not sufficiently knowledgeable about the VTR, consult your school media person or contact the local Instructional Media Centre or the distributor.

(2) Have the VTR serviced regularly by professionals. This may prevent the machine from being out of service for long periods of time and ensures the quality of the image and sound. Learn the simple maintenance techniques such as cleaning the "heads." These will help prolong the life of the parts and reduce "down time."

(3) Learn the proper techniques for connecting the machines (VTR and television) to ensure proper connections are made and to be able to run checks when problems arise.

(4) If several tapes are used on the same machine, the tracking and skew controls may have to be adjusted in order to obtain the best quality of picture. These two controls may make a great difference in the ultimate quality.

(5) Always keep VTR's covered. These machines are especially susceptible to dust, which causes increased wear of the "heads" (the mechanical parts which "read" the tape).

(6) Refrain from jarring the VTR or the television.



# FIELD TRIPS

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The following facilities have been listed as they provide excellent educational opportunities for the science student. Though not intended to be exhaustive, this listing indicates some of the exceptional facilities found in or near Alberta's two main centres. Throughout the province, there may be many others which are well suited to the science student's needs, and provision has been made for the teacher to list these on page 36.

Please contact the centres listed at the address or telephone number indicated prior to planning a field trip to ensure that all the necessary arrangements have been made prior to your arrival. In most cases, the teacher is advised to contact these agencies well in advance of a planned outing.

Teachers are also encouraged to refer to the section titled "Suggestions Regarding a Field Studies Program," page 18, of the *Curriculum Guide for Junior High School Science* (1978).

If you feel that there are other facilities of note which should be included in this listing, please feel free to contact the undersigned Learning Resources Officer. No doubt there are other teachers who would benefit from this additional information and would be pleased to obtain it.

Please contact:

Mr. Rod E. McConnell  
Learning Resources Officer (Science)  
Audio Visual Services Branch  
2nd Floor, West Wing  
Devonian Building  
11160 - Jasper Avenue  
Edmonton, Alberta T5K 0L2

Telephone: 427-2943

# calgary

## A. Calgary Centennial Planetarium

The planetarium features school oriented programs on the universe as well as an observation deck on which telescopes are used. As well, the Pleides Theatre is used for various concerts, films, lectures, etc. The planetarium also hosts an aero-space museum and various astronomy-related resources and equipment useful to teachers and students. For more information contact:

Calgary Centennial Planetarium  
701 - 11th Street, S.W.  
Calgary, Alberta T2P 2C4  
Telephone: 264-4060

## B. The Calgary Zoo

This facility boasts a large collection of animals and birds as well as a dinosaur exhibit using life-size models. This complex is highly recommended for the science student. For more information contact:

The Calgary Zoo  
St. George's Island  
Memorial Drive East  
Calgary, Alberta  
Telephone: 265-9310

## C. Devonian Gardens

An indoor 1 hectare park provides a setting for tropical plants, a children's playground and skating during winter. For more information contact:

The Devonian Gardens  
4th Floor, Toronto Dominion Square  
2nd Street & 8th Avenue S.W.  
Calgary, Alberta  
Telephone: 266-7493

D. Fish Creek Park

Designed to be maintained as a conservation area, this park features local prairie wildlife and an interpretive centre.

Fish Creek Park  
Macleod Trail & Canyon Meadow  
Drive  
Calgary, Alberta  
Telephone: 278-0111

E. The Fish Hatchery

Aquaria and tanks allow the visitor the opportunity to view the many varieties of trout and other types of fish of Alberta prior to their distribution to lakes and streams.

The Fish Hatchery  
1440 - 17th A. Street, S.E.  
Calgary, Alberta T2G 4T9  
Telephone: 261-6561

F. Glenbow-Alberta Institute

A number of historical and art displays is complemented by an excellent minerology collection. For more information contact:

Glenbow-Alberta Institute  
9th Avenue and 1st Street, S.E.  
Calgary, Alberta  
Telephone: 264-8300

G. Inglewood Bird Sanctuary

The banks and islands of the Bow River provide a setting for waterfowl, some of which are enclosed in pens. For more information contact:

Inglewood Bird Sanctuary  
9th Avenue and 23 Street, S.E.  
Calgary, Alberta  
Telephone: 269-6688

#### H. Reader Rock Gardens

These outdoor gardens geature native plants from Europe, Asia, the Orient, and the South Pacific. For more information contact:

Reader Rock Gardens  
26th Avenue & 2nd Street, S.E.  
Calgary, Alberta

#### I. Sulphur Plants

Please contact local oil companies for more information on field trips to facilities.

# edmonton

## A. ALBERTA GOVERNMENT

### The Provincial Museum of Alberta

A wealth of resources awaits the science teacher and student at the museum. Special guided tours for classes may be arranged to complement a particular curricular subject if so desired. For bookings and more information, contact:

Attention: Margaret McInall  
The Provincial Museum of Alberta  
12845 - 102 Avenue  
Edmonton, Alberta T5N 0M6  
Telephone: 452-2150, Ext. 247

### The Mobile Planetarium (Provincial Museum of Alberta)

A mobile planetarium (produced by Alberta Culture) is presently touring the province. The planetarium is designed to be set up in schools and provide educational programs to classes of students. Please contact:

Attention: Mr. John Musgrave  
Provincial Museum of Alberta  
12845 - 102 Avenue  
Edmonton, Alberta T5N 0M6  
Telephone: 452-2150, Ext. 291

## B. CITY OF EDMONTON

### The Muttart Conservatory

Of interest to biology-botany students, the four pyramids of the conservatory provide excellent displays of plants belonging to the tropical, arid and temperate zones as well as a special show house. Teachers may arrange for guided tours by contacting:

The Muttart Conservatory  
c/o Edmonton Parks and Recreation  
10th Floor, CN Tower  
Edmonton, Alberta T5J 0K1  
Telephone: 428-3664

The Queen Elizabeth Planetarium

This planetarium provides audio visual shows designed for specific grade levels on a variety of astronomical topics. The planetarium also carries a selection of astronomical instruments as well as print and non-print materials for those interested in astronomy. Teachers who plan to have classes attend planetarium shows may obtain information learning packages relative to the show and book specific times by contacting:

The Queen Elizabeth Planetarium  
c/o Edmonton Parks and Recreation  
10th Floor, CN Tower  
Edmonton, Alberta T5J 0K1  
Telephone: 455-0119

The Valley Zoo

Open from May to October, the Valley Zoo hosts a variety of animals and birds. Teachers may obtain more information by contacting:

Attention: Mr. G. Vandepolder  
The Valley Zoo  
c/o Edmonton Parks and Recreation  
10th Floor, CN Tower  
Edmonton, Alberta T5J 0K1  
Telephone: 483-5511

C. THE UNIVERSITY OF ALBERTA

Department of Physics Observatory

The U of A observatory, situated atop the Physics Building on the campus, is open late September to April yearly. Depending upon the weather, observations and/or audio visual programs are presented. Various astronomical phenomena may be viewed as they come into favorable positions in the night sky. For more information and bookings, contact:



Office of Community Relations  
Room 423, Athabasca Hall  
University of Alberta  
Edmonton, Alberta T6G 2E8

Telephone: 432-4201

or

Dr. Doug Hube: 432-5410  
Dr. Austin Gulliver: 432-3987

## FIELD TRIP LISTING

List below any institution/area to which field trips are deemed worthwhile.

NAME \_\_\_\_\_

ADDRESS/TELEPHONE

NOTES

[illegible]

# Learning Resources

# Evaluation

Your reaction to this listing is appreciated. Please remove the form, fill it in, and mail it at your convenience.

Please indicate your answers to the following questions by circling one of the numbers listed.

1. The format of this listing is:

(Poor) 1 2 3 4 5 (Excellent)

Comments: \_\_\_\_\_

\_\_\_\_\_

2. I feel that this listing is:

(Very difficult to use) 1 2 3 4 5 (Easy to use)

Comments: \_\_\_\_\_

\_\_\_\_\_

3. I find the page numbering system:

(Confusing) 1 2 3 4 5 (Easy to follow)

Comments: \_\_\_\_\_

\_\_\_\_\_

4. I find the following area of the listing to be of little assistance:

\_\_\_\_\_

\_\_\_\_\_

5. I find the following area of the listing to be of great assistance:

\_\_\_\_\_

\_\_\_\_\_

6. I would like to see the following areas added to the listing:

\_\_\_\_\_

\_\_\_\_\_

7. I would like to see the following areas removed from the listing:

\_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Stamp

Rod E. McConnell  
Learning Resources Officer  
Curriculum Branch  
2nd Floor, West Wing  
Devonian Building  
11160 - Jasper Avenue  
Edmonton, Alberta T5K 0L2

Postal Code: \_\_\_\_\_

Return: \_\_\_\_\_

AN ANNOTATED SAFETY BIBLIOGRAPHY FOR SCIENCE TEACHERS:

The following annotated bibliography of publications related to safety in the science laboratory and/or classroom is provided for your information.

1. Are You Lab Safe? Calgary Board of Education. September 1976. Three colour filmstrips and cassette tapes and a teacher's guide. Tested material devised by classroom teachers and professionally produced. Highly effective with students. Locally relevant. High School. (order on school letterhead).
2. Bargen, P. F. The Legal Status of the Canadian Public School Pupil. Toronto: The Macmillan Company of Canada Limited, 1961. 172 pages.  
The classic Canadian work on the legal aspects of teaching. Should probably be read by all teachers, regardless of subject speciality.
3. Care of Experimental Animals: A Guide for Canada. Ottawa: Canadian Council on Animal Care. 48 pages. Free.  
The definitive short volume on care of laboratory animals in Canada.
4. Chemical Reference Manual, Volume 1. MCB Manufacturing Chemists. Distributed (free) by MCB Chemical supply houses. Contains an excellent safety handbook, summary of disposal methods, and a list of incompatible chemicals.
5. Chemistry Safety (Monograph) Calgary: Calgary Board of Education, 1977. 80 pages.  
Detailed help in planning safe chemistry experiences. Keyed to the new Alberta program.
6. Everett, K. and Jenkins, E.W. A Safety Handbook for Science Teachers Don Mills, Ontario: John Murray (distributed in Canada by Longman Canada Limited) 1977. 100 pages.  
Some of the terminology may raise a smile and the cartoons may induce a belly-laugh. The material is sober enough. Well written and useful.
7. Guide for Safety in the Chemical Laboratory. Second edition. Manufacturing Chemists Association. Toronto: Van Nostrand Reinhold Company, 1972. 505 pages.  
One of the best small books on the subject. Contains records of actual chemical accidents. Also includes a compact chart-style hazard listing, as well as instructions for waste disposal.
8. A Guide to Safety in the Science Laboratory. Tallahassee, Florida: State Department of Education, (Bulletin) 1969. 93 pages. The notes on poison control centres and on the hazards of coral snakes and night blooming jasmine may seem rather limited in usefulness to Albertans! However, there is much that is worthwhile and the document very readable.

9. Joye, E. Michael. "Law and the Laboratory" The Science Teacher September 1978.  
A well written article on negligence as it applies to science teachers in the laboratory. The article refers to American jurisprudence. There are difference between American and Canadian law, though certain aspects of Common Law are the same.
10. Mento, Mary Ann. "Chemical Disposal for a High School Chemistry Laboratory" (article) The Science Teacher, January 1973.  
Practical advice on a difficult problem.
11. Physics Safety (Monograph) Calgary: Calgary Board of Education, 1977. 57 pages.  
Detailed help in planning safe physics experiences. Keyed to the new Alberta program.
12. Recommended Practice for Schools Relating to the Use of Living Organisms and Material of Living Origin. London, England: The English Universities Press Ltd., 1974. 39 pages.  
This little paperback (Schools Council of Great Britain) is a superb distillation of the best advice on use of living organisms in schools.
13. Safety in the Elementary Science Classroom. A guide produced by the NSTA Subcommittee on Safety. Washington, DC: The National Science Teachers Association, 1978.  
A colour coded flip chart with general advice for the Elementary Science Teacher. Somewhat specific to the American scene, but very useful.
14. Safety in Science Laboratories, DES Safety Series No. 2. Department of Education and Science, London: Her Majesty's Stationery Office, 1973, 30 pages.  
Some of the references are rather local in nature and the pamphlet tends to be rather dry in tone, but it is a very useful reference for the school laboratory.
15. Safety in the Science Laboratory. Produced by Diana Wylie Limited, England for Singer SVE Educational. Pine Grove, Ontario; Carman Eduational Associates.  
Colour filmstrip with cassette and teacher's guide. Shows pictures of labs having multiple hazards and the same lab cleaned up. Very effective review tool with Junior High students. British environment and tape commentary may cause a laugh or two.
16. Safety in the Science Laboratory. Calgary: Calgary Board of Education, 1976.  
Colour filmstrip, cassette tape and teacher's guide. Developed by teachers and professionally produced. This material works well with students. Junior High. (Order on school letterhead).



17. Safety in the Secondary Science Classroom. A guide produced by the NSTA Subcommittee on Safety. Washington DC: The National Science Teachers Association, 1978. 112 pages.  
Up-to-date general advice on Safety programs and procedures. Somewhat specific to the American scene, but accurate and readable.
18. Safety Procedures for the Use of Demonstration Laser Devices in Schools.  
Ottawa: Information Services, Department of National Health and Welfare, 1976.  
A report of the working group on radiation surveillance to the federal-provincial sub-committee on environmental health. Advice on the use of low powered lasers in the classroom approved by the Environmental Health Sub-Committee.
19. Sax, N. Irving. Dangerous Properties of Industrial Materials. Toronto: Van Nostrand Reinhold Company Limited, 1975. 1258 pages. The section on properties (general information, hazard analysis, countermeasures) is alphabetically arranged. This excellent reference, or Steere's book, or both, ought to be available in each school board office.
20. Science Safety Procedure Handbook. Edmonton: Edmonton Catholic School Board, 1978, 1978. 52 pages.  
Serves as a format for local development of a safety bulletin.
21. Science K-12 Safety Bulletin. Calgary: Calgary Board of Education, 1977. 106 pages.  
Serves as a format for local development of a safety bulletin.
22. Sibley, Christine E. "Negligence in the Science Laboratory" Alberta Science Education Journal, Vol. XVLL, No. 1, September 1978.  
An accurate and readable summary of the position of the science teacher in the laboratory, relative to negligence.
23. Steere, Norman V., Editor. Handbook of Laboratory Safety. Cleveland, Ohio: CRC Press, 1976. 854 pages.  
One of the best known and best primary references for Chemistry laboratory safety. Includes exhaustive material of most kinds of chemical hazards, and a superb list of specific chemical hazards. This reference, or Sax's book, or both, ought to be available in each school board office.



# LIFE SCIENCE





## GRADE 7 LIFE SCIENCE PRINT RESOURCES

### Prescribed References

Carter, J. L. et al, *Life Science: A Problem Solving Approach*, Scarborough: Ginn and Company, 1977.

This text is aimed at developing both a basic understanding of the concepts of life science and the processes of scientific investigation. The laboratory investigations form an integral part of the topics that are studied. The student investigations are clearly outlined and easy to follow.

The text follows the program quite closely and the teacher's guide includes many good ideas and useful techniques and additional resources. The text has been screened by the Metric Commission and uses SI units.

Smallwood, W. L., *Challenges to Science: Life Science*, Scarborough: McGraw-Hill, 1976.

This text follows the course outline very closely and includes many sections that are useful to students such as periodic review sections and the laboratory activities. A deliberate effort has been made to emphasize environmental concerns. The emphasis on the acquisition of knowledge make this text most suitable for average and above average students.

### Additional Textual Resources

These are materials that are available in the market place but, for one reason or another, have not been recommended as prescribed references.

Educational Research Council of America, *You and the Environment: An Investigative Approach*, Markham: Houghton-Mifflin, Canada, 1976.

The E.R.C. program has an exceptionally stimulating approach to the teaching of environmental studies. The text is well printed and, although non-SI, it has a lot to recommend it as a secondary resource.

Fabiano, E. R. and E. S. Liberson, *Life: Activities and Explorations*, Markham: Houghton-Mifflin, Canada, 1975.

For the less motivated student relatively weak in verbal, mathematical or scientific skills. The concepts developed are more appropriate for the grade 10 program but may be of some use to teachers as an "idea" book. Non-SI and American in orientation.

Heimler, C., *Focus on Life Science*, Agincourt: Charles E. Merrill, 1977.

An authoritative approach to the presentation of the concepts related to introductory biology. For the above average student who needs challenges and a greater depth of explanation.

Interaction Science Curriculum Project, *Interaction of Man and the Biosphere*, 2nd edition, Agincourt: Gage and Co., 1974.

A highly activity-centered approach to teaching science, calling for a lot of teacher-student interaction with materials and organisms. A source of many fine student activities.

Stone, A. H. and L. R. Sherman, *Spaceship Earth: Life Science*, Markham: Houghton-Mifflin, Canada, 1975.

A colorful, well-written program that emphasizes the interrelationships among living things. The student experiments are simple and are an integral part of the program. It offers an alternative organizational plan that teachers might find useful.

Thurber, W. A. et al, *Exploring Life Science*, Toronto: Allyn and Bacon, 1975.

A book that incorporates many student activities in the development of the life science program. It poses a series of questions that a student should answer in exploring the topics covered by the program. It is non-SI but is part of a program that is approved in many parts of Canada.

Wooley, I. et al, *Ryerson Science in Action*, Scarborough: McGraw-Hill, 1969-73.

A series of nine paperbacks designed for grades 4-7 that focuses on teaching science in the out-of-doors. An excellent resource for teachers. (Canadian but non-SI.)

Vance, F. R. et al, *Wildflowers Across the Prairies*, Saskatoon: Western Producer Prairie Books, 1977.

Color photographs and descriptions of some 270 species of flowering plants of the northern great plains of North America. A most useful guide to wildflowers in the prairie region of Alberta.

### Teacher References

Anderson, H. O. and P. G. Koutnik, *Toward More Effective Science Instruction in Secondary Education*, Don Mills: Collier-Macmillan, 1972.

Norholt, E. et al, *Teaching High School Science: A Sourcebook for the Biological Science*, Don Mills: Longman Canada, 1958.

Troyer, D. L. et al, *Sourcebook for Biological Sciences*, Don Mills: Collier-Macmillan, 1972.

Romey, W. D., *Inquiry Techniques for Teaching Science*, Toronto: Prentice-Hall, 1968.

Biology Keys, School Book Branch, Alberta Education.

*Key to Alberta Amphibia*

*Key to the Aquatic Mollusks*

*Key to the Bryophytes*

*Key to the Families of Alberta Fishes*

*Key to the Mammals of Alberta*

*Key to the Principal Groups of Alberta Insects*

*Key to the Tree-Dwelling Lichens*

Zim et al, *Golden Nature Guides*, Don Mills: Fitzhenry and Whiteside (Golden Press).

Salt, W. R. and A. L. Wilk, *Birds of Alberta*, Edmonton: Hurtig, 1976.

Cormack, R. G. H., *Wild Flowers of Alberta*, Edmonton: Hurtig, 1977.





CORE  
7



**C7.1** ALL SETS OF OBJECTS INCLUDING LIVING THINGS MAY BE  
CLASSIFIED INTO GROUPS HAVING COMMON CHARACTERISTICS

# PRINT

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Prescribed References for Grade 7

Carter, J. L. et al, *Life Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977.

Smallwood, W. L., *Challenges to Science: Life Science*, Scarborough:  
McGraw-Hill, 1976.



# VIDEO

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## ANNOTATION

## NOTES

INTRODUCING INSECTS

120629

Outlines the distinguishing features of insects and differentiates them from other forms of animal life as well as the difference between anthropods and true insects.

Producer: National Film Board, 1960/June 1979  
17 min.      b/w      sound      jrsr





# FILM

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## ANNOTATION

## NOTES

### ANIMAL CLASSIFICATION

A1703

Introduction to animal taxonomy. The horse is used as a case study for describing the Linnean system of classification. Includes statements on the purposes of taxonomy and the reason for using Latin terminology. Summation done in reverse order, from species to kingdom, by hand painting that uses a free system for analogy.

Producer: C-B Films, 1962

11 min.      color      sound      ejrsr      \$2.50

### ANIMALS OF THE ICE AGE

B2723

Shows how scientists from a museum dig up bones and determine to what animals they belonged by comparing them with other bones of both contemporary and prehistoric animals. Other animals of prehistoric times are shown: urus, cave-dwelling bear, mammoth. Methods of study and identification are discussed.

Producer: Northern Films, 1961

15 min.      b/w      sound      jra      \$2.50

### BACTERIA

B1965

Demonstrates the basic characteristics of bacteria: structure, feeding, and reproduction. Shows how bacteria are classified and describes their ecological importance as the first link in certain food chains and as a cause of decomposition. Photomicrography is used to show cell division and conjugation.

Producer: EBF, 1962

19 min.      color      sound      jrsrca      \$3.90

ANNOTATIONNOTES

## DUCKS, OF COURSE

B2649

That one duck is not necessarily the same as another is made clear in this film in an attempt to protect the dwindling species. The star of the film is a hunter who is obviously light on duck lore but heavy on the trigger. By the time everything has been made clear, he and everyone know a good deal more about duck identification.

Producer: NFB, 1966

16 min.      color      sound      g      \$3.40

## INTRODUCING INSECTS

B1452

A veritable Who's Who of the insect world. Ushers you into a wonderland of nature for an absorbing study of creatures more colorful and quite as complex as much larger forms of animals. The film considers such questions as: What really is an insect? Do insects differ from other animals?

Producer: NFB, 1960

17 min.      color      sound      g      \$2.50

## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

### FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## C7.2 CELLS ARE THE UNIT OF STRUCTURE AND FUNCTION OF MOST LIVING THINGS

# PRINT

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### Prescribed References for Grade 7

Carter, J. L. et al, *Life Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977.

Smallwood, W. L., *Challenges to Science: Life Science*, Scarborough:  
McGraw-Hill, 1976.





# VIDEO

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## ANNOTATION

## NOTES

LIVING BIOLOGY: DIFFUSION AND OSMOSIS 124102

Uses models with live and time-lapse photography to demonstrate osmosis in a living plant. (AVSB)

Producer: Alberta School Broadcasts,  
1965/Unlimited

Series: Living Biology  
30 min. b/w sound jrsr

SCIENCE OF THE SEA 126601

Studies the activities and equipment of the marine scientist. Explains water cycle and food cycles of the ocean, and the factors affecting density, salinity. (AVSB)

Producer: Martin Bovey Films, 1972?  
18 min. b/w sound jrsr



# FILM

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## ANNOTATION

## NOTES

### BACTERIA

B1965

Demonstrates the basic characteristics of bacteria: structure, feeding, and reproduction. Shows how bacteria are classified and describes their ecological importance as the first link in certain food chains and as a cause of decomposition. Photomicrography is used to show cell division and conjugation.

Producer: EBF, 1962

19 min.      color      sound      jrsrca      \$3.90

### THE FIRST MANY-CELLED ANIMALS:

#### THE SPONGES

B1973

Demonstrates that the sponge represents one development of multicellularity in animals and shows some of the adaptations of the body plan of this primitive animal. Live photography, animation, photomicrography, and laboratory experimentation show life processes and adaptation of sponges to their environment.

Producer: EBF, 1962

17 min.      color      sound      jrsrca      \$3.40

### GROWTH OF PLANTS

B2366

Illustrates the dynamics of plant process, especially as it affects woody plants, and shows how cell division, elongation, and differentiation contribute to stem and root growth. The film explains how materials are dispersed throughout the plant and demonstrates the effects of various stimuli, such as hormones, gravity and light on plant growth.

Producer: EBF, 1962

21 min.      color      sound      jrsrca      \$5.10

ANNOTATIONNOTES

## MITOSIS

C2263

Illustrates the fundamental process of cell division in plant and animal life and discusses the importance of the mitotic process to the growth and maintenance of an organism. Photomicrography shows the process of cell division actually taking place in a living cell. The effects of chemicals and radiation on dividing cells are demonstrated.

Producer: EBF, 1960

24 min.      color      sound      jrsr      \$5.80

## THE PENETRATING EYE

B2887

Shows several examples of the three-dimensional photomicrography possible through the use of the scanning electron microscope. Compares results to those obtained with conventional light and electron microscopes, explaining the workings of each type.

Producer: Wexler, 1970

21 min.      color      sound      g      \$2.50

## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

### FORMAT

CATALOGUE NO.

SOURCE

[illegible]





## **C7.3** LIVING THINGS REQUIRE ENERGY TO CARRY ON CERTAIN FUNDAMENTAL PROCESSES IN ORDER TO SUSTAIN LIFE

# PRINT

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### Prescribed References for Grade 7

Carter, J. L. et al, *Life Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977.

Smallwood, W. L., *Challenges to Science: Life Science*, Scarborough:  
McGraw-Hill, 1976.



# VIDEO

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## ANNOTATION

## NOTES

ECOLOGY, YOU AND YOUR ENVIRONMENT: 132207  
VENI VIDI VICI

Deals with the preservation of all life forms which share our environment and illustrates the concept of a food chain.

Producer: Ontario Educational Communications  
Authority, 1972?/Sept. 1978

Series: Ecology, You and Your Environment  
20 min. color sound uejrsr

ENVIRONMENTAL SCIENCE: OUR 132303  
DEPENDENCE ON PLANTS

The many ways in which man depends upon vegetation for food, clothing, shelter and a multitude of other products are the topics of this program.

Producer: Ontario Educational Communications  
Authority, 1968/March 1980

Series: Environmental Science  
20 min. color sound jr

ENVIRONMENTAL SCIENCE: SERVANTS 132304  
OF MAN

The relationships between men and domesticated animals are examined. The question of feeding palatable food to pets when many are starving is also discussed.

Producer: Ontario Educational Communications  
Authority, 1968/March 1980

Series: Environmental Science  
20 min. color sound jr

ANNOTATIONNOTES

HOW GREEN PLANTS MAKE FOOD: 122720  
PHOTOSYNTHESIS

Through animation, microphotography and live demonstrations, the process of photosynthesis is explored. Emphasizes the importance of green plants as food and examines recent research in this vital field of scientific study.

Producer: Universal Education and Visual Arts,  
1968/August, 1980  
13 min. color sound

THE LIFE CYCLE OF A PLANT 122749

Plant growth is traced from seed to mature plant to new seed: germination, pollination, seed development and fertilization. (AVSB)

Producer: Universal, 1970/August 1980  
11 min. b/w sound jrsr

LIFE ZONES OF THE CENTRAL ROCKIES 127301

Provides a basis for studying the ecology of the four life zones found in ascending a mountain-side in the Central Rockies. (AVSB)

Producer: Educational Film Distributors,  
197?/1978  
21 min. color sound jrsr

LIVING BIOLOGY: DIFFUSION AND 124102  
OSMOSIS

Uses models with live and time-lapse photography to demonstrate osmosis in a living plant. (AVSB)

Producer: Alberta School Broadcasts,  
1965/Unlimited  
Series: Living Biology  
30 min. b/w sound jrsr

PHOTOSYNTHESIS 124103

The role and relationship of pigments, gas exchange and carbon dioxide in photosynthesis are explained. (AVSB)

Producer: Alberta School Broadcasts,  
1965/Unlimited  
21 min. color sound jrsr

ANNOTATION

NOTES

SCIENCE OF THE SEA 126601

Studies the activities and equipment of the marine scientists. Explains water cycle and food cycles of the ocean, and the factors affecting density, salinity. (AVSB)

Producer: Martin Bovey Films, 1972?

18 min. b/w sound jrsr

SEE FOR YOURSELF: BIRDS OF 121713  
THE HIGHLANDS

Examines the great variety of birds in the mountains and around the lochs in the Scottish Highlands. (AVSB)

Producer: Alberta School Broadcasts,  
1970/Unlimited

Series: See for Yourself

30 min. b/w sound uejr





## ANNOTATION

## NOTES

LIFE?

120169

The film discusses the general characteristics of life as we know it. A number of examples are included to show how life has adapted to Earth conditions, and how certain life forms can withstand environmental shocks. The conditions on Mars are described, raising the question of the possibility of life existing there. (NASA Group) (AVSB)

Producer: NASA 197/Perpetual  
14 min. color sound jrsr

LIVING IN SPACE I: THE CASE FOR  
REGENERATION 120138

Shows what is needed to provide men with fresh air, drinkable water, food and personal hygiene as well as the problems of converting waste materials into usable products. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual  
Series: Living in Space  
12 min. color sound jrsr

LIVING IN SPACE II: REGENERATION  
PROCESSES 120124

Shows the principles of physics, chemistry, and mechanics employed in regenerative life support systems. Includes oxygen recovery, water purification, food and waste management, humidity and temperature control. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual  
Series: Living in Space  
12 min. color sound jrsr

ANNOTATIONNOTESLIVING IN SPACE III: A TECHNOLOGY 120133  
FOR SPACECRAFT DESIGN

Shows the features that must be incorporated into a spacecraft intended for long duration manned space flight and the technology that is being developed to solve the numerous problems. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual  
Series: Living in Space  
20 min. color sound jrsr

## MARS AND BEYOND? 160302

This film traces the Viking mission to Mars to explore the biochemical evidences of life. Elementary chemical components of life (as we know it) are introduced; these are related to the Gas Chromatograph Mass Spectrometer (GCMS). Design and operating function are described. The film concludes with the potential significance of biochemical findings--how they may relate to past, present and future Martian life. (NASA Group) (AVSB)

Producer: NASA 197/Perpetual  
14 min. color sound jrsr

## MARS--IS THERE LIFE? 160330

Students are introduced to the possible past history of Mars and its present surface topography--volcanoes, ice caps, streambeds, impact craters, canyons and wind-eroded surfaces. The Viking Lander and its biology experiments are discussed in relationship to the search for life on Mars. Students are asked to consider life forms that might be able to survive on Mars and the potential significance of their discovery. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual  
14 min. color sound jrsr

## MARS--THE SEARCH BEGINS 120160

Review of the knowledge gained from over 7,000 pictures obtained by Mariner 9. The film focuses on the possibility of life on Mars and offers graphic portrayals of life forms that could exist there. (NASA Group) (AVSB)

Producer: NASA 1973/Perpetual  
29 min. color sound jrsr

# FILM

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## ANNOTATION

## NOTES

### ABOVE THE TIMBERLINE

B1634

Explores the upper regions of the Alpine tundra zone, showing in close-up the flora and fauna which survive in extremes of altitude and cold. Explains that the alpine height nurtures a remarkable variety of vegetation including bright flowers and plants with hairy or waxy leaves. Includes views of the mountain goat, elk, and bighorn sheep.

Producer: NFB, 1960

16 min.      color      sound      g      \$2.50

### ANIMAL ADAPTATIONS TO A NORTHERN ENVIRONMENT

B3368

Shows how animals in the Arctic region of North America adapt to their environment. Describes food gathering in summer and hibernation in winter.

Producer: CBS-BFA, 1970

11 min.      color      sound      jrsra      \$3.40

### BACTERIA

B1965

Demonstrates the basic characteristics of bacteria: structure, feeding, and reproduction. Shows how bacteria are classified and describes their ecological importance as the first link in certain food chains and as a cause of decomposition. Photomicrography is used to show cell division and conjugation.

Producer: EBF, 1962

19 min.      color      sound      jrsrca      \$3.90

ANNOTATIONNOTES

## BIRD WING ADAPTATIONS

B2209

Uses charts, close-up photography, and action spots on land and in flight to examine the structure of the various bird wings and to relate the structure to survival by adaptation. Among the birds studies are the heron, pigeons, hummingbirds, crows, and the bald eagle.

Producer: IFB, 1964

17 min.      color      sound      a      \$4.00

ECHINODERMS: SEA STARS AND THEIR  
RELATIVES

B1979

Describes the characteristics of the echinoderm body and shows how it is adapted for locomotion, respiration, digestion, and reproduction. Examples of the five classes of echinoderms are shown, and the various stages of reproduction and development are illustrated with live photography and photomicrography. Laboratory experiments using sea urchin eggs are shown.

Producer: EBF, 1962

14 min.      color      sound      jrsrca      \$3.40

## GENE ACTION

B1989

This is a film about the biochemical mechanisms of inheritance, a field in which some of the most exciting discoveries in science are now being made. Through simple animation, the film shows how the DNA of chromosomes can replicate itself during mitosis and how it can serve as a pattern for messenger RNA, how the arrangement of nucleotides in the DNA molecule can form a genetic code for amino acids. The role of RNA as intermediary at protein formation sites in the cytoplasm is shown. Live action sequences show how work with neurospora and other simple organisms is useful in the study of genetic mechanism. The film concludes with an example of how new knowledge of the biochemical mechanisms of inheritance is helping in the treatment of genetic disorders among humans.

Producer: EBF, 1963

16 min.      color      sound      jrsrca      \$3.40

ANNOTATIONNOTES

## GROWTH OF PLANTS

B2366

Illustrates the dynamics of plant process, especially as it affects woody plants, and shows how cell division, elongation, and differentiation contribute to stem and root growth. Explains how materials are dispersed throughout the plant and demonstrates the effects of various stimuli, such as hormones, gravity, and light on plant growth.

Producer: EBF, 1962

21 min.      color      sound      jrsrca      \$5.10

## GYMNOSPERMS

B1969

Demonstrates that gymnosperms are seed plants which bear their seeds on cones. Animation and time-lapse sequences trace the life cycle of the pine through the growth of the pollen and seed cones, pollination, fertilization, and germination of seeds. Examples of less known gymnosperms are shown, and the importance of conifers is illustrated.

Producer: EBF, 1961

17 min.      color      sound      jrsrca      \$3.40

## HOW NATURE PROTECTS ANIMALS

B1923

Shows various ways by which animals are provided with devices to conceal themselves, either for the purposes of protection or as a means of securing food through fleetness of foot, mimicry, protective coloration, armor, and secluded homes. Includes the rabbit, raccoon, giraffe, tiger, lion, zebra, goat, pheasant, looper caterpillar, and beehawk moth.

Producer: EBF, 1959

11 min.      color      sound      g      \$2.50



ANNOTATIONNOTES

HOW PINE TREES REPRODUCE:  
PINE CONE BIOLOGY

B2262

Time-lapse and close-up photography examine the processes involved in the reproduction of pine trees: the opening mechanism of pine cones, the fertilization of seed producing cones by windborn pollen from male cones, the dissemination and the germination of seeds. The film also stresses the importance of continuing research to improve the quality of North America's valuable pine forests.

Producer: EBF, 1964

11 min.      color      sound      jrsrca      \$2.70

INTRODUCING INSECTS

B1452

A veritable Who's Who of the insect world. Ushers you into a wonderland of nature for an absorbing study of creatures more colorful and quite as complex as much larger forms of animals. The film considers such questions: What really is an insect? Do insects differ from other animals?

Producer: NFB, 1960

17 min.      color      sound      g      \$2.50

LIFE STORY OF THE HUMMINGBIRD

B2362

Presents a study of the life cycle of the smallest bird. Shows and explains physical characteristics, feeding habits, courtship, nest building, incubation and hatching of eggs, care and growth of the nestling, and eventually the first flight of the young.

Producer: EBF, 1963

16 min.      color      sound      g      \$4.00

LIFE STORY OF THE REDWINGED BLACKBIRD

B2361

The film reveals the redwing's typical activities and behavior during the nesting season: its courtship ritual, nest-building techniques, hatching and care of the young, food gathering, and defence against natural enemies. Views of the mass migration to their winter ranges in the south are also shown.

Producer: EBF, 1966

11 min.      color      sound      g      \$2.70

ANNOTATIONNOTES

THE MAYFLY: ECOLOGY OF AN AQUATIC INSECT B3581

This film reveals the mayfly Hexagenia's life history, its importance as part of freshwater food chains and its dependence upon unpolluted water for survival.

Producer: E.B.E. Corporation, 1973  
15 min. color sound jrsrc \$4.10

ORIGIN OF LAND PLANTS: LIVERWORTS AND MOSSES B1967

Traces the evolution of land plants and illustrates the structural characteristics, reproductive processes, and adaptive mechanisms of liverworts and mosses. Shows their relationship to the development of higher land plants. Photomicrography and animated drawings are used to illustrate the adaptive and reproductive processes.

Producer: EBF, 1962  
14 min. color sound jrsrca \$2.90

POLAR BEAR C3398

The film traces the animal's migration from summer dens to winter ice floes and records the work being done by Canadian scientists who are gathering information.

Producer: CBC, 1972  
28 min. color sound jrsra \$6.90

ROOT GROWTH AND SOIL FAUNA PA146

A study of the growth of fruit tree roots and the relationships which exist between the roots and different species of soil. The film was shot over a period of three years from a specially built underground glass chamber.

Producer: Dept. of Education and Science, 1972  
9 min. color sound g \$2.50

ANNOTATIONNOTES

## SECRETS OF THE PLANT WORLD

B1684

Describes the various ways in which seeds are planted without the help of men. Uses time-lapse photography to show the growing, budding, and flowering of many plants.

Producer: Walt Disney Productions, 1960

Series: Walt Disney: Secrets of Life

15 min.      color      sound      g      \$2.80

## SIMPLE PLANTS: THE ALGAE

B1966

Illustrates typical forms of algae, explains their structure, describes their revolutionary development, and shows how algae have adapted to all types of moist environments. The reproductive processes of algae are shown with photomicrography. The importance of algae to aquatic animals and man is explained.

Producer: EBF, 1962

18 min.      color      sound      jrsrca      \$3.40

## STINGING-CELLED ANIMALS: COELENTERATES

B1974

Describes characteristics of the phylum Coelenterata, the typical coelenterate body plan, and provides examples of the three classes. Shows how coelenterates obtain and digest their food, how they reproduce by sexual and asexual processes, and how they move. Examples of fresh and salt water coelenterates are shown.

Producer: EBF, 1962

17 min.      color      sound      jrsrca      \$3.40

## SURVIVAL OF THE KIT FOX

B3150

This film is a case history of an animal now threatened with extinction due to the widespread use of DDT. Also shows the kit fox in its natural habitat.

Producer: Journal, 1969

15 min.      color      sound      g      \$3.70

ANNOTATIONNOTES

A TREE IS A LIVING THING

B2024

For all children, especially those studying natural science in elementary grades. This film shows, through a motion picture camera linked to a high-powered microscope, the miracle of the leaf as it turns sunlight into chlorophyll, how a tree feeds, breathes, and grows.

Producer: NFB, 1964

11 min.      b/w      sound      ejr      \$2.50

WAY OF LIFE

C1391

A study of predation that deals with an essential way of living in which all creatures, including man, take part.

Producer: Missouri Conservation, 1958

27 min.      color      sound      jrsrca      \$4.30



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TITLE

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CATALOGUE NO.

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[illegible]





**C7.4** ALL LIVING THINGS INTERACT WITH AND ARE INTERDEPENDENT  
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**PRINT**

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# VIDEO

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Producer: Educational Film Distributors,  
1971/1977  
20 min. b/w sound uejrsr

DESERT ECOLOGY 124011

A useful tape on plant and animal life in the Arizona Desert. (AVSB)

Producer: Educational Film Distributors,  
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18 min. b/w sound jrsr

ECOLOGY OF THE ARCTIC 124232

Highlights the ecology of this vast frontier, one of the most sparsely populated areas, but home to an infinite variety of plants and animals. (AVSB)

Producer: Oxford Film Inc., 1974/1979  
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ECOLOGY, YOU AND YOUR ENVIRONMENT: 132206

Comments on man's misuse of his own body through overeating, lack of exercise, misuse of drugs and chemicals, and an unbalanced diet.

Producer: Ontario Educational Communications  
Authority, 1972?/Sept. 1978

Series: Ecology, You and Your Environment  
20 min. color sound uejrsr

ANNOTATIONSNOTES

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VENI VIDI VICI

Deals with the preservation of all life forms which share our environment and illustrates the concept of a food chain.

Producer: Ontario Educational Communications  
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20 min. color sound uejrsr

ENVIRONMENTAL SCIENCE: OUR 132303  
DEPENDENCE ON PLANTS

The many ways in which man depends upon vegetation for food, clothing, shelter and a multitude of other products are the topics of this program.

Producer: Ontario Educational Communications  
Authority, 1968/March 1980  
Series: Environmental Science  
20 min. color sound jr

ENVIRONMENTAL SCIENCE: SERVANTS 132304  
OF MAN

The relationships between men and domesticated animals are examined. The question of feeding palatable food to pets when many are starving is also discussed.

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Series: Environmental Science  
20 min. color sound jr

LAY OF THE LAND: WASTELANDS 120503  
. . . OR??

The land previously referred to as "bald" prairie, "bogy" marshes, "desolate" deserts has gained greater regard due to a higher degree of ecological awareness and appreciation. (AVSB)

Producer: Alberta School Broadcasts,  
1973/Unlimited  
Series: Lay of the Land  
30 min. color sound uejr

ANNOTATIONS

NOTES

NATURE ENVIRONMENT: ALBERTA 110602  
WILDLIFE

Al Karvonen and his family hike to Egypt Lake,  
Scarab Lake and Mummy Lake, filming the  
beautiful wildlife along the way.

Producer: ACCESS, 1972

Series: Nature Environment

20 min. b/w sound jrsr

SCIENCE OF THE SEA 126601

Studies the activities and equipment of the  
marine scientist. Explains water cycle and  
food cycles of the ocean, and the factors  
affecting density, salinity. (AVSB)

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An intimate view of the miniature cosmos that  
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of the marsh. (AVSB)

Producer: National Film Board, 1956/March 1980

22 min. b/w sound jr

THE WORLD OF DARKNESS 133704

Illustrates the ways in which different animals  
are adapted for life in the dark. Shown are  
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Producer: National Geographical Society,

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25 min. color sound sr





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## NOTES

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## NOTES

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11 min. color sound jrsra \$3.40

BAOBAB: PORTRAIT OF A TREE F3472

Studies the interdependence of life in and around an African baobab tree.

Producer: McGraw-Hill, 1973  
53 min. color sound jrsr \$13.50

BATHURST ISLAND EXPEDITION C3381

Shows a biological expedition to the High Arctic Islands. Studies behavior and adaptations of tundra wolf, Arctic hare, muskox, Peary caribou, rock ptarmigan, sanderling, and other birds.

Producer: Cymar, 19?  
30 min. color sound jrsr \$6.50

ANNOTATIONSNOTESBEHAVIOR AND ECOLOGY OF CORAL REEF  
FISHES C3498

Examines a number of species of butterfly fish and how they have adapted to life on the coral reef.

Producer: ?, 1974  
29 min. color sound ca \$7.30

## BETWEEN THE TIDES PB1

Reveals some of the interesting plant and animal life that is not always visible to the naked eye and shows creatures of the rock-pools and shallow waters of Britain's coastal area. Explains their relationships to each other and to their environment.

Producer: British Transport, 1963  
22 min. color sound jrsrca \$2.50

## DEATH OF A LEGEND F2960

The wolf is yet another threatened species, largely because of the myths that have grown around it. This film disproves many of the fallacies, studying the wolf's life cycle, social organization, and role in the balance of nature,

Producer: NFB, 1971  
50 min. color sound g \$8.50

## DEER FAMILY OF NORTH AMERICA B2350

The origins, ranges, habitats, characteristics, and life histories of the North American members of the deer family are examined. Migration and evolution are made clear with animation techniques. The special survival needs of different members are considered, including conservation measures in supplementary feeding programs, hunting restrictions, and habitat preservation.

Producer: IFB, 1966  
18 min. color sound jrsrca \$4.40

ANNOTATIONSNOTES

## THE DESERT I

C1701

The desert biome is characterized by widespread drought-resistant evergreen plants which carry on photosynthesis all year and by small annual plants that flower only in the spring rainy season and then die. The true deserts of California and Arizona have as their dominant plants the creosote bush in association with the burro weed. In the film, we see a wide variety of plant and animal life and locate the desert areas of the world.

Producer: EBF, 1962

22 min.      color      sound      jrsrca      \$4.30

## THE DESERT II

C3399

Shows the many plants and animals that have adapted to the desert's difficult conditions.

Producer: CBC, 1971

28 min.      color      sound      jrsra      \$6.80

## DUCKS, OF COURSE

B2649

That one duck is not necessarily the same as another is made clear in this film in an attempt to protect the dwindling species. The star of the film is a hunter who is obviously light on duck lore but heavy on the trigger. By the time everything has been made clear, he and everyone know a good deal more about duck identification.

Producer: NFB, 1966

16 min.      color      sound      g      \$3.40



ANNOTATIONSNOTES

ECOLOGY CHECKS AND BALANCES B3154

Macro-photography techniques were used to document the life cycle of the aphid and ladybug. Their biological relationship is studied.

Producer: Pyramid, 1971  
14 min. color sound jrsrca \$4.50

ECOLOGY OF THE PRONGHORN, MOUNTAIN SHEEP AND MOUNTAIN GOAT B2574

Describes the life cycle, yearly habitats, physiology, and defence mechanisms of the pronghorn, mountain sheep, and mountain goat. Discusses how these animals have adapted to their environment.

Producer: Berlet, 1966  
15 min. color sound jrsrca \$4.00

EDGE OF THE BARRENS B2020

A film study of the tundra of Canada's sub-arctic, stretching from the polar sea to the southern treeline. Despite the permafrost, this land supports a variety of living things such as the musk ox, caribou, birds, and flowers.

Producer: NFB, 1963  
14 min. color sound jrsrca \$2.50

THE FIRST MANY-CELLED ANIMALS: THE SPONGES B1973

Demonstrates that the sponge represents one development of multicellularity in animals, and shows some of the adaptations of the body plan of this primitive animal. Live photography, animation, photomicrography, and laboratory experimentation show life processes and adaptation of sponges to their environment.

Producer: EBF, 1962  
17 min. color sound jrsrca \$3.40

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22 min. color sound jrsrca \$2.50

## DEATH OF A LEGEND F2960

The wolf is yet another threatened species, largely because of the myths that have grown around it. This film disproves many of the fallacies, studying the wolf's life cycle, social organization, and role in the balance of nature,

Producer: NFB, 1971  
50 min. color sound g \$8.50

## DEER FAMILY OF NORTH AMERICA B2350

The origins, ranges, habitats, characteristics, and life histories of the North American members of the deer family are examined. Migration and evolution are made clear with animation techniques. The special survival needs of different members are considered, including conservation measures in supplementary feeding programs, hunting restrictions, and habitat preservation.

Producer: IFB, 1966  
18 min. color sound jrsrca \$4.40

ANNOTATIONSNOTES

## THE DESERT I

C1701

The desert biome is characterized by widespread drought-resistant evergreen plants which carry on photosynthesis all year and by small annual plants that flower only in the spring rainy season and then die. The true deserts of California and Arizona have as their dominant plants the creosote bush in association with the burro weed. In the film, we see a wide variety of plant and animal life and locate the desert areas of the world.

Producer: EBF, 1962

22 min.      color      sound      jrsrca      \$4.30

## THE DESERT II

C3399

Shows the many plants and animals that have adapted to the desert's difficult conditions.

Producer: CBC, 1971

28 min.      color      sound      jrsra      \$6.80

## DUCKS, OF COURSE

B2649

That one duck is not necessarily the same as another is made clear in this film in an attempt to protect the dwindling species. The star of the film is a hunter who is obviously light on duck lore but heavy on the trigger. By the time everything has been made clear, he and everyone know a good deal more about duck identification.

Producer: NFB, 1966

16 min.      color      sound      g      \$3.40

ANNOTATIONSNOTES

## ECOLOGY CHECKS AND BALANCES B3154

Macro-photography techniques were used to document the life cycle of the aphid and ladybug. Their biological relationship is studied.

Producer: Pyramid, 1971  
14 min. color sound jrsrca \$4.50

## ECOLOGY OF THE PRONGHORN, MOUNTAIN SHEEP AND MOUNTAIN GOAT B2574

Describes the life cycle, yearly habitats, physiology, and defence mechanisms of the pronghorn, mountain sheep, and mountain goat. Discusses how these animals have adapted to their environment.

Producer: Berlet, 1966  
15 min. color sound jrsrca \$4.00

## EDGE OF THE BARRENS B2020

A film study of the tundra of Canada's sub-arctic, stretching from the polar sea to the southern treeline. Despite the permafrost, this land supports a variety of living things such as the musk ox, caribou, birds, and flowers.

Producer: NFB, 1963  
14 min. color sound jrsrca \$2.50

## THE FIRST MANY-CELLED ANIMALS: THE SPONGES B1973

Demonstrates that the sponge represents one development of multicellularity in animals, and shows some of the adaptations of the body plan of this primitive animal. Live photography, animation, photomicrography, and laboratory experimentation show life processes and adaptation of sponges to their environment.

Producer: EBF, 1962  
17 min. color sound jrsrca \$3.40

ANNOTATIONSNOTES

## THE GREAT BARRIER REEF

F2916

The unique ecosystem of the Reef, off the coast of Australia, is in danger from the Crown of Thorns, a coral-eating variety of starfish. Man must decide whether to risk introducing new elements, or to leave the Reef alone and wait for the results.

Producer: NBC, 1970

53 min.      color      sound      g      \$11.30

## THE HIDDEN WORLD

C2418

Dr. Graham Bell Fairchild, a pioneer in the field of entomology, describes his work in Panama. Three themes--discovering the "hidden world," controlling insect populations, and observing social insects--are developed in a visual context in this nature study. Close-ups of insect structure and behavior, dramatic documentation of life in several insect societies, the ant, termite and honeybee are shown.

Producer: National Geographic/EBF, 1966

24 min.      color      sound      jrsrca      \$6.79

## HOW NATURE PROTECTS ANIMALS

B1923

Shows various ways by which animals are provided with devices to conceal themselves, either for the purposes of protection or as a means of securing food through fleetness of foot, mimicry, protective coloration, armor, and secluded homes. Includes the rabbit, raccoon, giraffe, tiger, lion, zebra, goat, pheasant, looper caterpillar, and beehawk moth.

Producer: EBF, 1959

11 min.      color      sound      g      \$2.50

## INTRODUCING INSECTS

B1452

A veritable Who's Who of the insect world. Ushers you into a wonderland of nature for an absorbing study of creatures more colorful and quite as complex as much larger forms of animals. The film considers such questions as: What really is an insect? Do insects differ from other animals?

C7.4 - F-5

Producer: NFB, 1960

17 min.      color      sound      g      \$2.50



ANNOTATIONSNOTES

## LIFE IN A VACANT LOT

A2436

Presents the interrelation of organisms living in an urban vacant lot. A changing community which can be found almost anywhere, a vacant lot has a short life because it is replaced by construction or plantings and is eventually "disturbed" by man.

Producer: EBF, 1966

10 min.      color      sound      jrsrca      \$2.70

## LIFE IN THE WOODLOT

B1528

A surprising peek into the hidden world of the underbrush where silent, relentless revalry is concealed by overhanging foliage or carpets of woodland flowers. The film brings into focus a pyramid of life in which lower orders sustain and support the higher orders. In the plant world, the film shows a similar struggle for supremacy.

Producer: NFB, 1960

14 min.      color      sound      g      \$2.50

## THE LIVING SEA

E3148

This film illuminates the secret world of the ocean. It reaveals the link in this chain of life and man's dependence on the natural cycle of life in "the living sea."

Producer: BBC, 19?

30 min.      color      sound      jrsrca      \$5.60

## LOOK TO THE MOUNTAINS

C3378

The Rocky Mountains provide a variety of habitats from rocky river valleys to cool alpine meadows. Shows a vast array of plants and animals and how they are adapted to life in their varied surroundings.

Producer: Cymar, 19?

30 min.      color      sound      g      \$6.50

ANNOTATIONSNOTES

## ONE DAY AT TETON MARSH

F2811

Based on the book by Sally Carrighar describing the wild life in a peaceful swamp where animals and birds are as free as the wind, and nature reigns supreme.

Producer: Walt Disney Productions, 1967

Series: Walt Disney: Animal Adventures

47 min.      color      sound      g      \$8.20

## POINT PELEE

C3400

This narrow peninsula on Lake Erie supports a unique combination of bird and plant life. A growing population desires the area as a playground but unless its use is controlled, it will be destroyed.

Producer: CBC, 1971

28 min.      color      sound      jrsra      \$6.80

## POLAR ECOLOGY: PREDATOR AND PREY

B2341

Illustrates the interaction of animals in both the Arctic and Antarctic regions. Documents principles of ecology governing predator-prey relationships, food chains, territories, and breeding success of selected animal species. Arctic scenes illustrate the interaction among the brown lemming, pomarine jaeger, least weasel, and snow owl. Antarctic scenes deal with parallel aspects among the adielie penguin, South Polar skua, and Weddel seal.

Producer: University of California, 1964

22 min.      color      sound      jrsrca      \$4.60

## PROWLERS OF THE EVERGLADES

C1695

Introduces the many kinds of wildlife found in the everglades: ibis, cormorant, spoonbill, turtle, egret, duck and otter, with emphasis on the alligator.

Producer: Walt Disney Productions, 1960

32 min.      color      sound      g      \$5.30

ANNOTATIONSNOTES

## THE RESTLESS SEA

C1788

The fascinating work of oceanographers in searching out the complex and interwoven relationship of nature in the sea is shown. Illustrates in film and animation the discoveries in many fields of marine research: physics, biology, meteorology, chemistry, geology, and engineering.

Producer: Walt Disney Productions, 1963  
60 min. color sound g \$2.50

## SECRETS OF THE UNDERWATER WORLD

B1683

Describes many of the unusual creatures to be found in the shallow seas in the tidal fringe and fresh water, including the stickle-back, diving spider, archer fish, kelpfish, jellyfish, centophere, angler fish, decorator crab, and fiddler crab.

Producer: Walt Disney Productions, 1960  
Series: Walt Disney: Secrets of Life  
16 min. color sound g \$2.80

## SUCCESSION: FROM SAND DUNE TO FOREST

B2429

Illustrates the process and general principles of ecological succession by which an area slowly and continuously changes until it becomes a stable, natural community. Photographed in the dunes at the southern end of Lake Michigan, this film shows one of the earliest and most thoroughly studies examples of the process.

Producer: Northwestern University/EBF, 1962  
16 min. color sound jrsrca \$4.00

## SUCCESSION ON LAVA

B3591

Photographs the many stages of succession that exist at different locations in Hawaii at the site of volcanic eruptions. Includes scenes of destruction due to lava flows and shows how new forms of life modify the environment.

Producer: E.B.E. Corporation, 1970  
14 min. color sound jrsr \$4.10

ANNOTATIONSNOTES

## THE TEMPERATE DECIDUOUS FOREST

B1961

Illustrates the complex network of plant and animal relationships that make up the temperate deciduous forest community. Shows typical deciduous forest plants and animals and their adaptations to seasonal change. The full yearly cycle of spring, summer, autumn and winter is shown through the use of time-lapse photomicrography and live photography.

Producer: EBF, 1962

14 min.      color          sound      jrsrca      \$3.40

## THE TROPICAL RAIN FOREST

B1962

Illustrates the interrelationship between the rich variety of plant and animal life and the warm, humid environment of the tropical rain forest. Shows the layered structure of tropical rain forest vegetation, describes conditions of temperature and rainfall, and provides a view of typical and rare species of tropical rain forest animal and plant life.

Producer; EBF, 1962

17 min.      color          sound      jrsrca      \$3.40

## WAY OF LIFE

C1391

A study of predation that deals with an essential way of living in which all creature, including man, take part.

Producer: Missouri Conservation, 1958

27 min.      color          sound      jrsrca      \$4.30

## WHAT IS ECOLOGY?

A2421

Introduces the study of ecology by illustrating the wide variety of interrelationships between plants, animals, and their environment. Shows how biologists study these interrelationships and explains the importance of such studies to mankind. The major biomes of the world are introduced.

Producer: University of Pittsburgh/EBF, 1962

11 min.      color          sound      jrsrca      \$2.70

ANNOTATIONNOTES

WILD DOG FAMILY: THE COYOTE

B2588

Tells the story of America's intelligent wild dog of the West and how it has survived and adjusted to encroaching civilization. Establishes the coyote's place in the canine family and reveals little known facts about its life.

Producer: Walt Disney Productions, 1968

18 min.      color      sound      g      \$4.60

THE WINNERS

C3307

Time-Life's cameramen use a high-powered lens to photograph nature's most adaptable species, the insect. Shows how quickly insects adapt to threats to their existence as in the case of their ability to develop resistance to insecticides.

Producer: McGraw-Hill, 1968

30 min.      color      sound      jrsr      \$7.80

WORLD IN A MARSH

B1249

The film examines the floating world of the marsh. It probes into the life forms that dwell beneath the water's surface and watches the creatures that choose the green jungle of weeds and swamp lilies for their habitat.

Producer: NFB, 1955

22 min.      color      sound      g      \$2.50

## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

## FORMAT

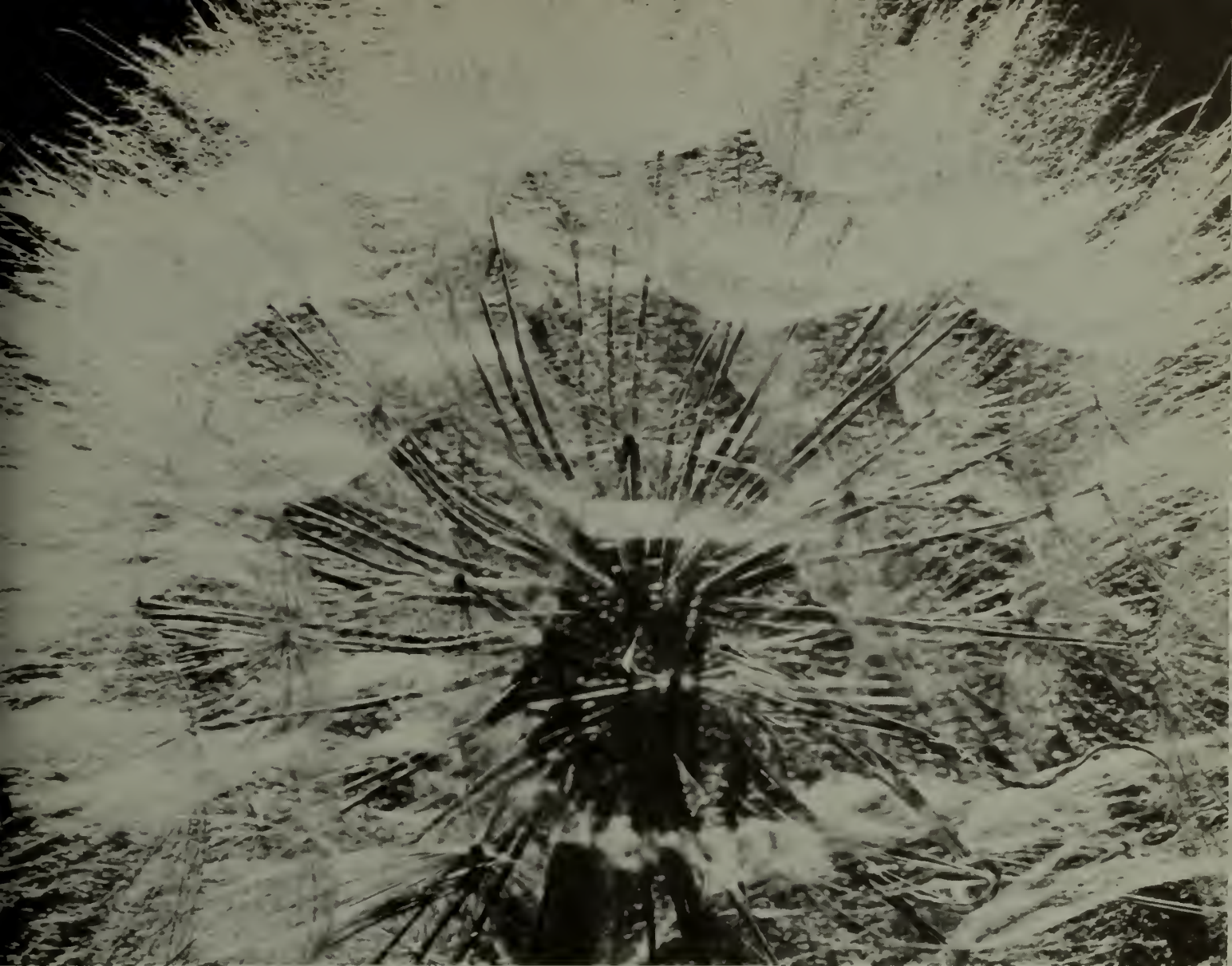
CATALOGUE NO.

SOURCE

[illegible]







# ELECTIVES

## 7




# E7.1 MANKIND'S INFLUENCE MAY INCREASE THE RATE OF CHANGE, WITH BENEFICIAL OR HARMFUL RESULTS TO THE ENVIRONMENT

## PRINT

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### I. Prescribed References for Grade 7

Carter, J. L. et al, *Life Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977.

Smallwood, W. L., *Challenges to Science: Life Science*, Scarborough:  
McGraw-Hill, 1976.

### II. From Prescribed References for Grades 8 and 9

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976. (Content items 2, 6, pp. 543-52)

Townsend, R. D. and P. DeH. Hurd, *Energy, Matter and Change*, Agincourt:  
Gage, 1973. (Content item 2, pp. 112-15)

### III. Additional Textual Resources for Grade 7

Educational Research Council of America, *You and the Environment: An  
Investigative Approach*, Markham: Houghton-Mifflin, 1976. (Content  
items 1, pp. 205-11; 7, pp. 285-91; 7, pp. 293-307)

Thurber, W. A. et al, *Exploring Life Science*, Toronto: Allyn and Bacon,  
1975. (Content items 1-6, pp. 395-98)

### IV. Other Print Resources

A. Available from: Alberta Transportation  
Communications Branch  
Transportation Building  
9630 - 106 Street  
Edmonton, Alberta T5K 2B8

*Alberta Resource Maps: Forests and Parks*, 1975. Four maps,  
21 cm. x 28 cm., color, \$.20 each. (Content item 5)

B. *Investigations in Science--A Modular Approach*, Wiley Publishers of  
Canada, 1974.

1. "Asphalt Jungle" (Content items 1 and 2, pp. 63-84)

2. "Networks" (Content item 1, pp. 47-65)

## V. From Learning Resources Kit

The following items may be obtained from the Learning Resources Kit.  
Please refer to page \_\_\_\_ for further information.

### A. Agriculture Canada:

1. *Five Ways to Keep Pesticides on Our Side*
2. (Series) *Proper Use of Pesticides Program*
  - a. *"The Program"*
  - b. *"Biological Control of Pests"*
  - c. *"Pest Control Products Act"*
  - d. *"Methods of Pest Control"*
  - e. *"Pesticides Development"*
  - f. *"Pesticides Waste Disposal"*
  - g. *"First Aid for Accidents with Pesticides"*
  - h. *"How to Use Pesticides"*

### B. Environment Conservation Authority:

1. *Employment, Productivity and Environment*
2. *Biocides and Birds*



# VIDEO

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## ANNOTATION

## NOTES

ECOLOGY, YOU AND YOUR ENVIRONMENT: 132201  
LOOK BACK FOR TOMORROW!

An introductory program designed as a capsule view of the environment; it shows how man has evolved from total dependence on his environment to being oblivious to it.

Producer: Ontario Educational Communications  
Authority, 1972?/Sept. 1978

Series: Ecology, You and Your Environment  
20 min. color sound uejr sr

ENVIRONMENTAL SCIENCE: CREATURES 132305  
OF THE WILD

The different ways in which man has tried to control wild animals are discussed.

Producer: Ontario Educational Communications  
Authority, 1968/March 1980

Series: Environmental Science  
20 min. color sound jr

ENVIRONMENTAL SCIENCE: THE 132301  
ENVIRONMENT OF MAN

Discusses the natural environment of Ontario when the Indians were the only inhabitants. Changes in the environment since that time are described.

Producer: Ontario Educational Communications  
Authority, 1974/March 1980

Series: Environmental Science  
20 min. color sound jr

NATURE ENVIRONMENT: OUR 110603  
ENDANGERED ENVIRONMENT

Our natural resources: mountains, lakes and rivers, forests and wildlife, are quickly disappearing as a result of the over-clearing of land. How can we best conserve our land?

Producer: ACCESS, 1972

Series: Nature Environment  
20 min. b/w sound jr sr

ANNOTATION

NOTES

ENVIRONMENTAL SCIENCE: USE OF LAND 132307

The problems incurred in land development and urbanization are explored.

Producer: Ontario Educational Communications  
Authority, 1968/March 1980

Series: Environmental Science  
20 min. color sound jr

ENVIRONMENTAL SCIENCE: USING OUR 132308  
ENVIRONMENT

Man has been dependent on his environment for food, clothing and shelter. We must use the environment well if we want its benefits to last.

Producer: Ontario Educational Communications  
Authority, 1976/March 1980

Series: Environmental Science  
20 min. color sound jrsr

# FILM

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## ANNOTATION

## NOTES

THE AGRICULTURAL REVOLUTION: B3289  
MAN AS A FOOD PRODUCER

This film depicts man in his role as farmer and domesticator of animals and demonstrates the effects of his change in lifestyle on man's culture. It relates the ancient food-producing societies to the present ones.

Producer: McGraw-Hill, 1970  
14 min. color sound jrsrc \$6.40

ALBERTA'S CHANGING ENVIRONMENT C2871

Examples of how strip mining, farming, spraying, and dumping are changing the Alberta landscape and affecting the wildlife. In some instances, these activities are being carried out with an eye to conservation, and the total effect is really only a change in location. In other instances, careless procedures result in almost irreparable destruction of the natural vegetation and wildlife habitats.

Producer: Edgar T. Jones, 1971  
22 min. color sound g \$2.50

THE CANADIAN SHIELD: SAGUENAY REGION B2294

The Saguenay area of Quebec is seen from a helicopter. From this vantage point, the size of region and its immense store of resources (wood, water, arable land, and mineral-bearing rock) are easy to see. At closer range, the film shows industrial and agricultural life, the high capacity aluminum smelters of Arvida, Chicoutimi's giant pulp and paper industry, and quiet pastoral scenes of rural Quebec.

Producer: NFB, 1965  
11 min. color sound ejrsr \$2.50



ANNOTATIONNOTES

DEATH OF A DELTA

C2865

Documents the urban/industrial benefits of the W.A.C. Bennett Dam on the Peace River in B.C. being received by the lower B.C. mainland, and studies the ecological effect of the dam--the delta is drying up, destroying the wildlife which provided the livelihood of the Indian and Metis population in Fort Chipewyan.

Producer: Film Frontiers Ltd., 1970

27 min.      color      sound      jrsrca      \$6.70

ENVIRONMENT IN THE BALANCE

PC119

Shows how geological, topographical, and social developments in Britain have helped to shape the environment. Discusses the problems of industrial expansion and population growth.

Producer: BIS, 1970

31 min.      color      sound      g      \$2.50

GREAT AMERICAN GOOSE EGG CO. OF CANADA      A3178

A satire on technology and industry in which the goose egg is symbolic of our natural resources. Civilization trods over a nature which struggles to survive.

Producer: Rank Audio, 1971

10 min.      color      sound      jrsrca      \$2.60

THE HOUSE OF MAN: OUR CHANGING  
ENVIRONMENT

B2427

Reveals the waste of resources in cities, woodlands, and farmlands, and the pollution of river water and air. Comparison is made between wasteful methods and through the intelligent preservation of resources.

Producer: Conservation Foundation/EBF, 1965

17 min.      color      sound      jrsrca      \$4.00

ANNOTATIONNOTES

## MAN AND HIS RESOURCES

C1616

Without reference to national boundaries, the film presents comparisons between privileged and underprivileged parts of the world. The whole range of social and economic disparity is examined from literacy to industrial output and techniques.

Producer: NFB, 1960

Series: Earth and Mankind, No. 2

29 min.      b/w      sound      srca      \$2.50

## TRAGEDY OF THE COMMONS

C3163

Discusses problems of overcrowding and questions whether there is an abundance of space left in which to expand. Points out problems that arise from overpopulation.

Producer: King Broadcasting

28 min.      color      sound      jrsrc      \$6.60

## WATER: OLD PROBLEMS, NEW APPROACHES

C2936

It takes 1,800 gallons of water per day to support an average North American, both directly and indirectly. As we near the end of the International Hydrological Decade (1965-75), this film looks at what is being done to provide water to arid land, to prevent or cure the waste and pollution of natural supplies, and methods to make the most efficient use of water in large quantities.

Producer: McGraw-Hill, 1968

30 min.      color      sound      jrsrc      \$7.80

ANNOTATIONNOTES

WATERFOWL: A RESOURCE IN DANGER

B2194

The prairies are the incubators of vast numbers of Canadian waterfowl, principally ducks, but as more land is drained and cultivated, there are fewer breeding grounds. This film shows the immense flocks of birds, their habits, and their dependence on wetlands of the prairies. How to maintain living space for the ducks without having them pose a threat to farmers' grainlands is a problem being studied by the Canadian Wildlife Service.

Producer: NFB, 1965

16 min.      color      sound      jrsrca      \$2.50

WHAT ARE WE DOING TO OUR WORLD?

C2884

PART I

Dr. Barry Commoner states that men must choose between modern comforts and conveniences on a reduced scale, or a world unfit for life. The nature of the interrelationships of living things is explained, and the effects of pollution on the planetary biosphere. Takes a closer look at such things as the greenhouse effect, oxygen cycles, and the results of chemical, air, and water pollutants.

Producer: CBC News, 1969

27 min.      color      sound      jrsrca      \$7.80

## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## E7.2 MANKIND COMMANDS THE USE OF A GREAT SUPPLY OF ENERGY TO CHANGE THE ENVIRONMENT TO HIS LIKING

# PRINT

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### I. Prescribed References for Grade 7

- Carter, J. L. et al, *Life Science: A Problem Solving Approach*, Scarborough: Ginn and Co., 1977.
- Smallwood, W. L., *Challenges to Science: Life Science*, Scarborough: McGraw-Hill, 1976.

### II. From Prescribed References for Grade 8

- Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough: McGraw-Hill, 1976. (Content item 1, pp. 302-305)

### III. Additional Textual Resources for Grade 7

- Educational Research Council of America, *You and Your Environment: An Investigative Approach*, Markham: Houghton-Mifflin, 1976. (General, pp. 213-21; content item 1, pp. 265-82; content item 1 and 2, p. 206)
- Thurber, W. A. et al, *Exploring Life Science*, Toronto: Allyn and Bacon, 1975. (Content items 1-3, pp. 424-516)

### IV. Other Print Resources

- A. Bryan Rorke, *Much is Taken, Much Remains: Canadian Issues in Environmental Conservation*, N. Scituate, Massachusetts: Dunbury Press, 1973. \$6.25 (paperback)
- B. Available from: Canadian Pulp and Paper Association  
2300 Sun Life Building  
Montreal, Quebec H3B 2X9  
*From Watershed to Watermark*, 1974.
- C. Dwivedi, O.P. (ed.), *Protecting the Environment--Issues and Choices, Canadian Perspectives*, Toronto: Copp Clark, 1974. \$6.95.
- D. *Investigations in Science--A Modular Approach, Water World*, Wiley Publishers of Canada, 1975. (Content items 2 and 3)

- E. Pringle, Lawrence, *Energy--Power for the People*, New York: MacMillan, 1975.
- F. Stanton, Chas. R., *Canadian Forestry: The View Beyond the Trees*, Canadian Forestry Service, Department of the Environment: MacMillan, Canada, 1976. (Content items 2 and 3)

V. From the Learning Resources Kit

A. Alberta Energy and Natural Resources:

1. *Clearing Land?* 1 page, illustrations. (Content item 3)
2. *The First Harvest*. 16 pages. See also videotape: *The First Harvest*. (Content item 3)
3. *The Vital Two-Thirds*. 14 pages. See also videotape: *The Vital Two-Thirds*. (Content item 3)

B. Environment Conservation Authority:

1. *Environmental Impact of Surface Mining in Alberta*, 1971. 6 pages. (Content items 2 and 3)
2. *Erosion of Land in Northeastern Alberta: Information Bulletin No. 3*. 22 pages, maps, illustrations. (Content items 2 and 3)
3. *Forest Utilization and Its Environmental Effects in Alberta*, 1973. 66 pages, charts, maps. (Content items 2 and 3)



# VIDEO

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## ANNOTATION

## NOTES

ENERGY: THE CONSUMPTION ASSUMPTION 125101

This program examines the flow of various kinds of energy in primitive societies and the wasteful consumption in the industrial world. (AVSB)

Producer: Alberta School Broadcasts,  
1975/Unlimited

Series: Energy  
15 min. color sound jrsr

ENERGY: TILTING AT WINDMILLS 125104

Some new and some old-fangled ideas about converting natural forces into usable energy are examined. (AVSB)

Producer: Alberta School Broadcasts,  
1974/Unlimited

Series: Energy  
30 min. color sound jrsr

ENVIRONMENTAL SCIENCE: CREATURES 132305  
OF THE WILD

The different ways in which man has tried to control wild animals are discussed.

Producer: Ontario Educational Communications  
Authority, 1968/March 1980

Series: Environmental Science  
20 min. color sound jr

ENVIRONMENTAL SCIENCE: USING OUR 132308  
ENVIRONMENT

Man has been dependent on his environment for food, clothing and shelter. We must use the environment well if we want its benefits to last.

Producer: Ontario Educational Communications  
Authority, 1976/March 1980

Series: Environmental Science  
20 min. color sound jrsr

ANNOTATION

NOTES

THE FIRST HARVEST

136701

The processes and considerations which must be undertaken in managing Alberta's forests are vividly presented in this program. Changes from a forest's natural life cycle to a man-made life cycle are well illustrated by sequences shot on location throughout Alberta. The program provides an excellent overview of the technologies and techniques necessary to the effective management of large tracts of forested land.

Producer: Jem Film Productions Ltd., 1977  
30 min. color sound uejrsr

NOTE: This program is complementary to the publication *The First Harvest* found in the Learning Resources Kit.

TREES FOR TOMORROW

143401

Points out a variety of techniques employed by the wood processors (pulp mills) to restore the sections of the forest which they harvest. (AVSB)

Producer: North Western Pulp and Power,  
1970/Unlimited  
20 min. b/w sound uejrsr

THE VITAL TWO-THIRDS

136801

The splendors and uses of Alberta's forests are presented via exciting, vivid images, music and narration. Covering two-thirds of the province, the forests are presented as a source of many products and an answer to the population's many needs. A constantly renewable resource, forests will be of continued concern to Albertans.

Producer: Jem Film Productions Ltd., 1977.  
30 min. color sound uejrsr

NOTE: This program is complementary to the publication *The Vital Two-Thirds* found in the Learning Resources Kit.

## ANNOTATION

## NOTES

ERTS: EARTH RESOURCES TECHNOLOGY 120116  
SATELLITE

Our resources are declining while demand increases. ERTS is developing a method to survey the Earth's resources by satellite.  
(NASA Group) (AVSB)

Producer: NASA 1972/Perpetual  
28 min. color sound jrsr

NEW LOOK AT AN OLD PLANET 120127

This program uses the experiences of a Texas family to dramatize the benefits of satellites in agricultural, oceanographic and natural resource studies. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual  
27 min. color sound jrsr

SPACE IN THE SEVENTIES: SPACE 120157  
DOWN TO EARTH

A visual presentation of the role satellites play in solving Earthbound problems. The film illustrates pollution tracing, mineral resources, making weather forecasts and measuring the earth.  
(NASA Group) (AVSB)

Producer: NASA 1970/Perpetual  
Series: Space in the Seventies  
28 min. color sound jrsr

ANNOTATIONNOTES

WET LOOK

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Explores how Landsat's remote sensing capabilities help resolve water resource problems. The satellite provides information to hydrologists about snowfall in the mountains, enabling them to estimate the basic water supply available to western states. Landsat helps in controlling floods, both by monitoring flood plains, and by mapping snow packs and potentially dangerous manmade lakes. Landsat also makes valuable contributions in flood assessment and pollution control. (NASA Group) (AVSB)

Producer: NASA 1976/Perpetual

15 min.          color          sound          jrsl

# FILM

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## ANNOTATION

## NOTES

### THE AGING OF LAKES

B3037

After introducing geological and ecological factors of normal aging of lakes, the film shows how man is speeding up the process through examples of indiscriminate disposal of fertilizers, sewage and industrial waste.

Producer: EBF, 1971

14 min.      color      sound      jrsrca      \$3.80

### THE CANADIAN SHIELD: SAGUENAY REGION

B2294

The Saguenay area of Quebec is seen from a helicopter. From this vantage point, the size of the region and its immense store of resources (wood, water, arable land, and mineral-bearing rock) are easy to see. At closer range, the film shows industrial and agricultural life, the high-capacity aluminum smelters of Arvida, Chicoutimi's giant pulp and paper industry, and quiet pastoral scenes of rural Quebec.

Producer: NFB, 1965

11 min.      color      sound      ejrsr      \$2.50

### THE CHANGING FOREST I

PC86

Until about fifty years ago, trees were cut down with complete disregard for the future, and little or no replanting took place. Today, land conservation, preservation, and reforestation is carried out by the Forestry Commission in two and one half million acres of Britain. This film outlines the necessity for forest conservation for future generations and shows how wildlife has been preserved and land made available for recreational activities.

Producer: Pilot Films Ltd., 1966

27 min.      color      sound      g      \$2.50

ANNOTATIONNOTES

## THE CHANGING FOREST II

B1322

The forest is shown as an integrated community of living things. The changing seasons are illustrated by shots of animals, plants, and flowers. Other scenes show insects laying eggs. Woven into this is a vivid picture of the battle of each living thing for survival, often at the expense of other living things.

Producer: NFB, 1959

18 min.      color      sound      g      \$2.50

## DEATH OF A DELTA

C2865

Documents the urban/industrial benefits of the W.A.C. Bennett Dam on the Peace River in B.C. being received by the lower B.C. mainland, and studies the ecological effect of the dam--the delta is drying up, destroying the wildlife which provided the livelihood of the Indian and Metis population in Fort Chipewyan.

Producer: Film Frontiers Ltd., 1970

27 min.      color      sound      jrsrca      \$6.70

## THE FORESTERS

B2648

The professional forester's day to day work is most responsible for making effective the discoveries, experiments, and research carried on at forestry stations across Canada. This film shows the modern technology of the timberland, and the role of the forester in the preservation and regeneration of this great natural resource.

Producer: NFB, 1968

14 min.      color      sound      jrsr      \$3.30



ANNOTATIONNOTES

## GRAND CANYON

C2266

Based on the writings of Joseph Wood Krutch, the film concerns the natural heritage of the West, basic geography of the canyon, conservation of natural beauty and primitive Indian culture. Contrasting footage juxtaposes primitive and modern life in its treatment of the Havasupi Indian tribe, the oldest native culture in the U.S., who still live in tenth-century fashion only miles from Boulder Dam. The film ends with a look at man's well-intentioned tampering with nature and the price he has paid for a lesson about the balance of nature.

Producer: NBC/EBF, 19?

26 min.          color          sound          jrsrca          \$5.00

THE HOUSE OF MAN: OUR CHANGING  
ENVIRONMENT

B2427

Reveals the waste of resources in cities, woodlands, and farmlands, and the pollution of river water and air. Comparison is made between wasteful methods and through the intelligent preservation of resources.

Producer: Conservation Foundation/EBF, 1965

17 min.          color          sound          jrsrca          \$4.00

## THE LONG VIEW

B3632

A look at ERTS, an earth-orbiting sensor-equipped satellite used in conjunction with air-borne sensing to relay a view of our planet. Also points out Canada's participation with NASA in a global study of our planet's eco-systems.

Producer: NFB, 1973

20 min.          color          sound          jrsra          \$4.00



ANNOTATIONNOTES

## MAN AND HIS RESOURCES

C1616

Without reference to national boundaries, the film presents comparisons between privileged and underprivileged parts of the world. The whole range of social and economic disparity is examined from literacy to industrial output and techniques.

Producer: NFB, 1960

29 min.      b/w                  sound                  srca                  \$2.50

## NORTH PACIFIC

C2468

It is an ocean of plenty, a vast aquatic pasture teeming with many species of fish and other marine life. Most sought is the salmon, but sometimes they do not "run". This film shows extensive studies of the ocean to determine how temperatures, winds, currents, and plankton affect the sea harvest.

Producer: NFB, 1966

27 min.      color                  sound                  jrsrca                  \$3.30

## OUR SOIL RESOURCES

A546

(Second edition) Describes the formation of soil, four soil zones of the U.S. and the damage to which they are subject, and three important ways to stop soil erosion. It shows how rock becomes soil and the characteristic vegetation of each soil zone and principal cultivated crops.

Producer: EBF, 1966

10 min.      b/w                  sound                  ejrsr                  \$2.50

## THE RAVAGED EARTH

C2917

Deals primarily with the reclamation of land left barren and eroded by strip mining in the Appalachians. The industry's path is marked by acidic soil, dust pollution, sulphuric rivers, and unhappy people.

Producer: NBC, 1970

27 min.      color                  sound                  g                  \$7.50

ANNOTATIONNOTES

## RIGHT TO BURN

C2492

Settlers and campers cause forest fires that burn millions of dollars worth of timber which costs thousands of dollars to bring under control. The film depicts events relating to the issuing of a burning permit to a settler who has made all the necessary preparations according to the regulations. However, a careless and foolish act becomes the start of a full-scale forest fire. Method of controlling and extinguishing the fire is shown.

Producer: Dept. of Lands and Forests, 19?  
30 min. color sound g \$2.50

## THE ROCKY MOUNTAINS

C2914

Depicts what scientists are doing to prevent environmental pollution and ecological disruption in the Canadian Rockies: control of animal populations, management of timber reserves, restrictions on commercial and tourist activities.

Producer: CBC, 1971  
35 min. color sound g \$6.60

## TREES FOR TOMORROW

B3057

An account of the forestry practices by North West Pulp and Power Ltd. to maintain a perpetual, sustained timber yield from their leases in western Alberta. Mechanical scarification of the land reduces fire hazard, eliminates soil erosion potential, and prepares a new seed bed. Greenhouse-grown seedlings are provided when natural regeneration is not successful.

Producer: North West Pulp and Paper, 19?  
18 min. color sound jrsrca \$2.50

## THE ULTIMATE FOREST

D3545

Shows the beauty and perfection of the natural systems within the forest, the impact man can make on such a resource and the conflicts in land use.

Producer: Proctor Gamble/Alberta Gov't., 1974  
35 min. color sound jrsra \$2.50

ANNOTATIONNOTES

WATER

B1774

Shows that conservation of water supplies requires attention throughout the world. Now you see that adequate water supplies depend not only on maintaining purity of our streams, but also on wise management of forests and other moisture-conserving herbiage of the earth.

Producer: U.N./NFB, 1961

15 min.      color      sound      g      \$2.50

WATER: OLD PROBLEMS, NEW APPROACHES

C2936

It takes 1,800 gallons of water per day to support an average North American, both directly and indirectly. As we near the end of the International Hydrological Decade (1965-75), this film looks at what is being done to provide water to arid land, to prevent or cure the waste and pollution of natural supplies, and methods to make the most efficient use of water in large quantities.

Producer: McGraw-Hill, 1968

30 min.      color      sound      jrsr      \$7.80

## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

### FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## E7.3 POLLUTION DUE TO MANKIND'S PRODUCTION AND USE OF ENERGY CAN BE MINIMIZED

# PRINT

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### I. Prescribed References for Grade 7

Carter, J. L. et al, *Life Science: A Problem Solving Approach*, Scarborough: Ginn and Co., 1977.

Smallwood, W. L., *Challenges to Science: Life Science*, Scarborough: McGraw-Hill, 1976.

### II. From Prescribed References for Grades 8

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*, Markham: Houghton-Mifflin, 1976. (General, pp. 543-70)

### III. Additional Textual Resources for Grade 7

Educational Research Council of America, *You and the Environment: An Investigative Approach*, Markham: Houghton-Mifflin, Canada, 1976. (Content items 1, pp. 279-81; 2, pp. 243-63; 3 and 4, pp. 223-41)

### IV. Other Print Resources

Chant, D. A. (ed.), *Pollution Probe*, Toronto: New Press, 1972. \$2.50 (paperback) (Use for general reference)

Information Canada, *Air Quality--Local, Regional and Global Aspects*, Ottawa, 1972. \$.75 (paperback) (Content items 3 and 4)

Morgan, Frank, *Pollution: Canada's Critical Challenge*, Toronto: McGraw, 1970. \$3.65 (paperback) (Use for general reference)

*People and Pollution*, Addison, 1977. 64 pages, \$2.00. (Use for general reference)

### V. From Learning Resources Kit

Alberta Environment:

1. *Air Quality*
2. *Fact Sheet--Urban Air Pollution*



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# VIDEO

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## ANNOTATION

## NOTES

ALBERTA'S CHANGING ENVIRONMENT 124230

An overview of factors leading to pollution in Alberta. (AVSB)

Producer: Alberta Wildlife Association,  
1970/Unlimited

28 min. b/w sound uejrsr

ECOLOGY, YOU AND YOUR ENVIRONMENT: 132202  
AIR--WE ERR

Explains the oxygen cycle, showing that the amount of oxygen produced by plants is nowhere near the amount required to support the oxygen consumed on this planet. Stresses the urgent need for air pollution control.

Producer: Ontario Educational Communications  
Authority, 1972?/Sept. 1978

Series: Ecology, You and Your Environment  
20 min. color sound uejrsr

ECOLOGY, YOU AND YOUR ENVIRONMENT: 132205  
Shhh!! SOUND

Points out some interesting aspects of excess sound investigations, stressing the necessity of curbing noise pollution if we are to retain our ability to hear.

Producer: Ontario Educational Communications  
Authority, 1972?/Sept. 1978

Series: Ecology, You and Your Environment  
20 min. color sound uejrsr

ANNOTATION

NOTES

ECOLOGY, YOU AND YOUR ENVIRONMENT: 132204  
WATER!!!

Designed to create concern for and awareness of the environmental crisis which threatens forms of life, the program illustrates the value of water and shows how man has polluted and misused this essential resource.

Producer: Ontario Educational Communications  
Authority, 1972?/Sept. 1978

Series: Ecology, You and Your Environment  
20 min. color sound uejrsr

ENERGY: WHICH ECO IS LOUDEST 125102

Some of the accepted trade-offs between what is economically desirable and what is ecologically sound are examined. (AVSB)

Producer: Alberta School Broadcasts,  
1975/Unlimited

Series: Energy  
15 min. color sound jrsr

HOW GREEN PLANTS MAKE FOOD: 122720  
PHOTOSYNTHESIS

Through animation, microphotography and live demonstrations, the process of photosynthesis is explored. Emphasizes the importance of green plants as food and examines recent research in this vital field of scientific study. (AVSB)

Producer: Universal Education and Visual Arts,  
1968/August 1980

13 min. color sound jrsr

NATURE ENVIRONMENT: AIR POLLUTION 110601

What is air; why is it so important; who uses air? What causes air pollution? What can we do about pollution? These are the questions raised in this program.

Producer: ACCESS, 1972

Series: Nature Environment

20 min. b/w sound jrsr

## ANNOTATION

## NOTES

SPACE IN THE SEVENTIES: SPACE 120157  
DOWN TO EARTH

A visual presentation of the role satellites play in solving Earthbound problems. The film illustrates pollution tracing, mineral resources, making weather forecasts and measuring the earth. (NASA Group) (AVSB)

Producer: NASA 1970/Perpetual  
28 min. color sound jrsr

POLLUTION BELOW 160303

This film presents the stories of three people far apart, caught up in dangerous situations caused by unexpected pollution. The threatening pollution of these three stories is seen through the eyes of NASA's satellite cameras, creating exciting images and colorful mosaics. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual  
14 min. color sound jrsr



# FILM

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## ANNOTATION

## NOTES

### ALBERTA'S CHANGING ENVIRONMENT

C2871

Examples of how strip mining, farming, spraying, and dumping are changing the Alberta landscape and affecting the wildlife. In some instances, these activities are being carried out with an eye to conservation, and the total effect is really only a change in location. In other instances, careless procedures result in almost irreparable destruction of the natural vegetation and wildlife habitats.

Producer: Edgar T. Jones, 1971

22 min.      color      sound      g      \$2.50

### THE FIRST MILE UP

C1769

Air, as well as water, is being polluted by the wastes of urban civilization. Cities whose lives are already crippled by smog are seen. Even where air pollution shows in less noxious forms, the threat gathers evidence of air pollution and its effects and presents the findings of experts who seek ways to control it.

Producer: NFB, 1961

28 min.      b/w      sound      g      \$2.50

### THE HOUSE OF MAN: OUR CHANGING ENVIRONMENT

B2427

Reveals the waste of resources in cities, woodlands, and farmlands, and the pollution of river water and air. Comparison is made between wasteful methods and through the intelligent preservation of resources.

Producer: Conservation Foundation/EBF, 1965

17 min.      color      sound      jrsrca      \$4.00

ANNOTATIONNOTES

NOISE: POLLUTING THE ENVIRONMENT D3039

Scientific investigation exposes various noise pollutants and shows how they affect our lives. These pollutants range from air and land vehicles to household appliances. The need for concern over increased noise levels and controls are explored.

Producer: EBF, 19?

16 min. color sound jrsrca \$4.50

OF BROCCOLI, PELICANS AND CELERY C3526  
AND SEALS

Traces the deterioration of the environment in California. Points out how pesticides sprayed on the Oxnard Plain are being washed to sea. Stresses the dangers of DDT to man and nature.

Producer: NET, 1970

Series: Our Vanishing Wilderness

30 min. color sound jrca \$3.60

OUR ENDANGERED ENVIRONMENT: AIR B2872

A film to acquaint young people with the composition and function of air and the sources and effects of pollution. Explains the responsibility of the individual and tells how the student can help.

Producer: Environmental Films, 1971

17 min. color sound ejr \$2.50

THE RAVAGED EARTH C2917

Deals primarily with the reclamation of land left barren and eroded by strip mining in the Appalachians. The industry's path is marked by acidic soil, dust pollution, sulphuric rivers, and unhappy people.

Producer: NBC, 1970

27 min. color sound g \$7.50



ANNOTATIONNOTES

RIVER WITH A PROBLEM

C1771

Shows the effect of pollution from the domestic and industrial wastes of cities. Interviews with specialists who study the problem and municipal leaders who are worried by it show the extent of pollution and its threat to the health and well-being of communities dependent on the river.

Producer: NFB, 1961

29 min.      color      sound      g      \$3.30



## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## E7.4

THE PRESERVATION OF MANKIND'S BIOLOGICAL RESOURCES  
DEPENDS ON AN AWARENESS AND THE POSITIVE ACTION OF  
EACH INDIVIDUAL

# PRINT

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### I. Prescribed References for Grade 7

Carter, J. L. et al, *Life Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977.

Smallwood, W. L., *Challenges to Science: Life Science*, Scarborough:  
McGraw-Hill, 1976.

### II. Additional Textual Resources for Grade 7

Educational Research Council of America, *You and the Environment: An  
Investigative Approach*, Markham: Houghton-Mifflin, Canada, 1976.  
(Content items 1-5, pp. 399-403)

### III. Other Print Resources

A. Available from: Publications Library  
Alberta Research Council  
11135 - 87 Avenue  
Edmonton, Alberta T6G 2C2

*Recycling of Waste Paper (I.S. No. 59)* by P. Gishler, 1972.  
31 pages, \$1.00. (Content item 6)

B. Andrew, Wayne, *Canadians and Their Environment*, Toronto: McClelland  
and Stewart, 1975. (Use for general reference)

C. Brehman, Thomas R., *Environmental Demonstrations, Experiments, and  
Projects for Secondary Schools*, West Nyack, New York: Parker  
Publishing Co., 1973. (Content item 2)

D. *Environmental Management: Perspectives in Alberta*, The Bio-Sciences  
Society of the University of Calgary, Calgary. (Use for general  
reference)

E. McCallum, Bruce, *Environmentally Appropriate Technology*, 3rd edition,  
Ottawa: Environment Canada, 1975. (Use for general reference)

F. McCallum, Bruce, *Environmentally Appropriate Technology*, 4th edition,  
Ottawa: Fisheries and Environment, Canada, 1977: (Use for  
general reference)

- G. Vancouver Environment Education Project, *Bush Studies--Creeks*, V.E.E.P., University of British Columbia, 1972. (Content items 2 and 5)
- H. Wagner, Richard H., *Environment and Man*, New York: Norton, 1971.  
(Use for general reference)

#### IV. From Learning Resources Kit

The following items may be obtained from the Learning Resources Kit.  
Please refer to page \_\_\_\_ for further information.

A. Alberta Energy and Natural Resources:

*Range: Its Nature and Use*, 1973. (Content item 5)

B. Alberta Environment:

*Environment Views*

C. Environment Conservation Authority:

1. *Human Communities and the Environment*, 1974. 24 pages.  
(Content items 1 and 5)
2. *Resource Development and Conservation*, 1975. 9 pages.  
(Use for general reference)

# VIDEO

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## ANNOTATION

## NOTES

ECOLOGY, YOU AND YOUR ENVIRONMENT: 132203  
BROWN INCIDENT

A humorous sketch involving Farmer Brown, a worm and a reporter is used to illustrate the dangers of land misuse and to show that soil is the most critical substance in our environment.

Producer: Ontario Educational Communications  
Authority, 1972?/Sept. 1978

Series: Ecology, You and Your Environment  
20 min. color sound uejrsr

ECOLOGY, YOU AND YOUR ENVIRONMENT: 132201  
LOOK BACK FOR TOMORROW!

An introductory program designed as a capsule view of the environment; it shows how man has evolved from total dependence on his environment to being oblivious to it.

Producer: Ontario Educational Communications  
Authority, 1972?/Sept. 1978

Series: Ecology, You and Your Environment  
20 min. color sound uejrsr

EDGE OF THE BARRENS 120621

An excursion into the vast solitudes of the Arctic tundra extending across Canada between the tree line and the Arctic Ocean. (AVSB)

Producer: National Film Board, 1963/June 1979  
14 min. b/w sound uejrsr

ENERGY: WHICH ECO IS LOUDEST 125102

Some of the accepted trade-offs between what is economically desirable and what is ecologically sound are examined. (AVSB)

Producer: Alberta School Broadcasts,  
1975/Unlimited

Series: Energy  
15 min. color sound jrsr



ANNOTATION

NOTES

ENVIRONMENTAL SCIENCE: OUR 132303  
DEPENDENCE ON PLANTS

The many ways in which man depends upon vegetation for food, clothing, shelter and a multitude of other products are the topics of this program.

Producer: Ontario Educational Communications  
Authority, 1968/March 1980

Series: Environmental Science  
20 min. color sound jr

ENVIRONMENTAL SCIENCE: USE OF LAND 132307

The problems incurred in land development and urbanization are explored.

Producer: Ontario Educational Communications  
Authority, 1968/March 1980

Series: Environmental Science  
20 min. color sound jr

ENVIRONMENTAL SCIENCE: USING OUR 132308  
ENVIRONMENT

Man has been dependent on his environment for food, clothing and shelter. We must use the environment well if we want its benefits to last.

Producer: Ontario Educational Communications  
Authority, 1976/March 1980

Series: Environmental Science  
20 min. color sound jrsr

LAY OF THE LAND: WASTELANDS 120503  
. . . OR??

The land previously referred to as "bald" prairie, "bogy" marshes, "desolate" deserts has gained greater regard due to a higher degree of ecological awareness and appreciation. (AVSB)

Producer: Alberta School Broadcasts,  
1973/Unlimited

Series: Lay of the Land  
30 min. color sound uejr

ANNOTATION

NOTES

NATURE ENVIRONMENT: OUR ENDANGERED 110603  
ENVIRONMENT

Our natural resources: mountains, lakes and rivers, forests and wildlife, are quickly disappearing as a result of the over-clearing of land. How can we best conserve our land?

Producer: ACCESS, 1972

Series: Nature Environment

20 min. b/w sound jrsr

OUTDOORS UNLIMITED: BANFF NATIONAL 123505  
PARK

A look at Canada's first National Park; its origins, geology and vegetation. The importance of existing parks and the development of additional parks is stressed. (AVSB)

Producer: Alberta School Broadcasts,  
1971/Unlimited

Series: Outdoors Unlimited

14 min. b/w sound uejrsr

TREES FOR TOMORROW 143401

Points out a variety of techniques employed by the wood processors (pulp mills) to restore the sections of the forest which they harvest. (AVSB)

Producer: North Western Pulp and Power,  
1970/Unlimited

20 min. b/w sound uejrsr



## ANNOTATION

## NOTES

WET LOOK

160310

Explores how Landsat's remote sensing capabilities help resolve water resource problems. The satellite provides information to hydrologists about snowfall in the mountains, enabling them to estimate the basic water supply available to western states. Landsat helps in controlling floods, both by monitoring flood plains, and by mapping snow packs and potentially dangerous manmade lakes. Landsat also makes valuable contributions in flood assessment and pollution control. (NASA Group) (AVSB)

Producer: NASA 1976/Perpetual  
15 min. color sound jrsr

NEW LOOK AT AN OLD PLANET

120127

This program uses the experiences of a Texas family to dramatize the benefits of satellites in agricultural, oceanographic and natural resource studies. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual  
27 min. color sound jrsr

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# FILM

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## ANNOTATION

## NOTES

### THE AGING OF LAKES

B3037

After introducing geological and ecological factors of normal aging of lakes, the film shows how man is speeding up the process through examples of indiscriminate disposal of fertilizers, sewage, and industrial waste.

Producer: EBF, 1971

14 min.      color      sound      jrsrca      \$3.80

### THE AGRICULTURAL REVOLUTION: MAN AS A FOOD PRODUCER

B3289

This film depicts man in his role as farmer and domesticator of animals and demonstrates the effects of his change in lifestyle on man's culture. It relates the ancient food producing societies to the present ones.

Producer: McGraw-Hill, 1970

14 min.      color      sound      jrsrc      \$6.40

### NORTH PACIFIC

C2468

It is an ocean of plenty, a vast aquatic pasture teeming with many species of fish and other marine life. Most sought is the salmon, but sometimes they do not "run." This film shows extensive studies of the ocean to determine how temperatures, winds, currents, and plankton affect the sea harvest.

Producer: NFB, 1966

27 min.      color      sound      jrsrca      \$3.30

### POINT PELEE

C3400

This narrow peninsula on Lake Erie supports a unique combination of bird and plant life. A growing population desires the area as a playground but unless its use is controlled, it will be destroyed.

Producer: CBC, 1971

28 min.      color      sound      jrsra      \$6.80

ANNOTATIONNOTES

## THE RAVAGED EARTH

C2917

Deals primarily with the reclamation of land left barren and eroded by strip mining in the Appalachians. The industry's path is marked by acidic soil, dust pollution, sulphuric rivers, and unhappy people.

Producer: NBC, 1970

27 min.      color      sound      g      \$7.50

## SURVIVAL OF THE KIT FOX

B3150

This film is a case history of an animal now threatened with extinction due to the widespread use of DDT. Also shows the kit fox in its natural habitat.

Producer: Journal, 1969

15 min.      color      sound      g      \$3.70

## TREES FOR TOMORROW

B3057

An account of the forestry practices by North West Pulp and Power Ltd. to maintain a perpetual, sustained timber yield from their leases in western Alberta. Mechanical scarification of the land reduces fire hazard, eliminates soil erosion potential, and prepares a new seed bed. Greenhouse-grown seedlings are provided when natural regeneration is not successful.

Producer: North West Pulp and Power, 19?

18 min.      color      sound      jrsrca      \$2.50

## THE ULTIMATE FOREST

D3545

Shows the beauty and perfection of the natural systems within the forest, the impact man can make on such a resource and the conflicts in land use.

Producer: Proctor Gamble/Alberta Gov't., 1974

35 min.      color      sound      jrsra      \$2.50



ANNOTATION

NOTES

WATERFOWL: A RESOURCE IN DANGER

B2194

The prairies are the incubators of vast numbers of Canadian waterfowl, principally ducks, but as more land is drained and cultivated, there are fewer breeding grounds. This film shows the immense flocks of birds, their habits, and their dependence on wetlands of the prairies. How to maintain living space for the ducks without having them pose a threat to farmers' grainlands is a problem being studied by the Canadian Wildlife Service.

Producer: NFB, 1965

16 min.      color      sound      jrsrca      \$2.50



## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

### FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## E7.5 A SIMPLE KEY MAY BE USED TO FACILITATE IDENTIFICATION OF ORGANISMS

# PRINT

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### I. Prescribed References for Grade 7

Carter, J. L. et al, *Life Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977. (Pages 55-61, 62-65)

Smallwood, W. L., *Challenges to Science: Life Science*, Scarborough:  
McGraw-Hill, 1976. (Pages 377-401, 316-321)



# FILM

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## ANNOTATION

## NOTES

WHAT IS A FISH?

C1980

Illustrates the major types of fishes. Shows the anatomy of a typical fish and demonstrates characteristic behavior patterns of various kinds of fishes. Underwater photography is used to reveal behavior patterns such as commensalism, spawning, predation, and territoriality.

Producer: EBF, 1963

22 min.      color      sound      jrsrca      \$4.40

WILD DOG FAMILY: THE COYOTE

B2588

Tells the story of America's intelligent wild dog of the West and how it has survived and adjusted to encroaching civilizations. Establishes the coyote's place in the canine family and reveals little known facts about its life.

Producer: Walt Disney Productions, 1968

18 min.      color      sound      g      \$4.60





# EARTH SCIENCE



## GRADE 8 EARTH SCIENCE PRINT RESOURCES

### Prescribed References

Heller, R. L. et al, *Challenges to Science: Earth Science*,  
Scarborough: McGraw-Hill, 1976.

A stimulating text written in a colloquial style which will appeal to many students. Most topics normally studied in grade 8 are presented at a level involving a good deal of physics and chemistry. Student activities, though rather limited, do relate directly to content. The selection of color photos and diagrams appears adequate but may have to be supplemented to relate more specifically to Alberta. This text has been screened by the Metric Commission staff and uses SI units throughout.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976.

This book offers a unique and appealing approach to the study of Earth Science (see chapter introductions and "Skullduggery" section at chapter end), yet presents an excellent blend of "discovery approach" along with concept development. It also offers a balanced approach to the theory of evolution and the biblical explanation. Considerable emphasis is placed on the topic of space with little emphasis on glaciation. The reading level and the many fine illustrations make it a very useful text. It does not, however, use SI units consistently, and some imperial units appear in the descriptions.

### Additional Textual Resources

These are materials that are available in the market place but, for one reason or another, have not been recommended as prescribed references:

Harris, M. F. et al, *Investigating the Earth*, Revised Edition,  
Markham: Houghton-Mifflin, 1973.

Presents Earth Science in a unified manner utilizing a concept development approach. Many and unique investigations together with excellent illustrations all emphasize the inquiry orientation of the book. Written for the able or above average student. Good as a teacher reference and as an alternate student reference.

Bishop, M. et al, *Focus on Earth Science*, 2nd edition, Agincourt:  
Charles E. Merrill, 1976.

Fairly detailed coverage of the Earth, its rocks and minerals, its crust and its atmosphere. Well-illustrated with end-of-chapter activities serving as good review. Activities or laboratory work are supplemental rather than essential to the content presented. Reading level is likely above that of the average grade 8 student. Useful as a teacher and/or student general reference.

Hibbs, A. R. and A. F. Eiss, *The Earth--Space Sciences*, Toronto: Doubleday, Canada, 1971.

A solid comprehensive book that presents a broad, integrated perspective of the universe, the solar system and the Earth. The controlled vocabulary used in the text all but ensures that the student learns the necessary terms as they first appear in their proper context. The process dimension is introduced in practically every lesson. The style is readable and clear, and much thought has gone into the selection of the diagrams and photographs which amply illustrate the text. The book can be recommended for use as an alternative program that introduces students to Earth-Space science. It does not use SI units.

Interaction Science Curriculum Project, *Interaction of Earth and Time*, Agincourt: Gage and Company, 1974.

This text uses activities, investigations and experiments to focus on Earth Science concepts and on science processes. Kits of laboratory supplies are recommended but most of the experiments can be performed with inexpensive materials. Many fine colored photographs and historical prints are included. Metric units are used but it has not been screened by the Metric Commission staff. The higher than average reading level and complex laboratory instructions reduce the general usefulness of this text.

Ramsey, W. L. et al, *Modern Earth Science*, Toronto: Holt, Rinehart and Winston, 1973.

The authors have produced a comprehensive set of materials that presents a view of the Earth and its content in a non-dogmatical way. The program has a high dependence on reading the text and a lot of the activities evolve from an interpretive type of action and tend to be very cognitive in character. The material covers a large number of topics to a considerable depth. The reading and conceptual level is a little high, being aimed at a grade 9 market. For example, Kepler's laws are introduced on page 13 and Newton's Law of Gravitation on page 15 in considerable detail. An excellent resource for the teacher! The rather poor use of metric units is somewhat distracting.

#### Teacher References

In addition to the teacher's editions of the above titles, the following seem especially suited as resources:

Abell, G., *Exploration of the Universe*, Toronto: Holt, Rinehart and Winston, 1969.

A.G.I., *Geology and Earth Sciences*, Sourcebook, Toronto: Holt, Rinehart and Winston, 1970.



Beckway, G. W. and E. Young, *Investigations in Earth Science*,  
Ajax: Stark Scientific (Hubbard Press), 1968.

Joseph, A. et al, *A Sourcebook for the Physical Sciences*, Don Mills:  
Longman Canada, 1961.

Longley, Richmond W., *The Climate of the Prairie Provinces*, Ottawa:  
Environment Canada, 1972.

Nelson, S., *The Face of Time*, Calgary: Alberta Society of  
Petroleum Geologists.

UNESCO, *Sourcebook for Science Teaching*, Ottawa: Information  
Canada, 1962.

Utgard, R. O., G. T. Ladd and H. O. Anderson, *Sourcebook for Earth  
Sciences and Astronomy*, Don Mills: Collier-Macmillan, 1972.

Zim et al, *Golden Nature Guides*, Don Mills: Fitzhenry and  
Whiteside (Golden Press).

*Fossils*

*Stars*

*Rocks and Minerals*

*Weather*

*Geology*

*Landforms*

*Ecology*

*Science and Creation, A Handbook for Teachers*, Creation-Science  
Research Center, 2716 Madison Avenue, San Diego, California.

*List of Resource Materials for Earth Science Teachers in Canadian  
Schools*, Canadian Geoscience Council, c/o Queens University.

## ADDITIONAL REFERENCES

### Astronomy-Related Texts

Mitton, Simon (ed.), *The Cambridge Encyclopedia of Astronomy*, New York: Crown Publishers, Inc., 1977, c. Trewin Copplestone Publishing Ltd., London. 481pp., illus., color.

A well-illustrated encyclopedia outlining the various areas of astronomy in easy to understand language.

Pasachoff, J. M., *Contemporary Astronomy (Saunders Golden Sunburst Series)*, W. B. Saunders Company, 1977. 588pp., illus., color/b&w.

Pasachoff, Jay M., Marc L. Kutner, and Naomi Pasachoff, *Student Study Guide to Contemporary Astronomy*. 155pp., diagrams, b&w.

This is a text designed for introductory astronomy at a university level. All main areas of astronomy are covered in a non-technical manner. The study guide features exercises based on the text to complement the basic concepts.

Hoyle, Fred, *Highlights in Astronomy*, W. H. Freeman and Company, 1975. 179pp., illus., color/b&w.

An overview of the contemporary state of astronomical science in general, non-technical terms. Well illustrated.

Hoyle, Fred, *Astronomy and Cosmology--A Modern Course*, San Francisco: W. H. Freeman and Company. 729pp., illus., color/b&w.

A university level text, well illustrated, and providing an overview of astronomy and cosmology. Essentially non-technical.

Jastrow, Robert and Malcolm H. Thompson, *Astronomy: Fundamentals and Frontiers*, 3rd ed., John Wiley and Sons, 1977, c. 1972. 532pp., illus., color/b&w.

A general purpose, illustrated, university level, non-technical text.

Texereau, Jean, translated/adapted by Allen Strickler, *How to Make a Telescope (The Natural History Library Anchor Books)*, Golden City, New York: Doubleday and Company, Inc., c1963. 258pp, illus., b&w drawings and photos (paperback).

Simple step-by-step procedures for making a reflecting telescope are given. A must for the young telescope maker.

Koestler, Arthur, *The Sleepwalkers: A History of Man's Changing Vision of the Universe*, Penguin Books, c1959. 612pp. (paperback).

Considered by some to be a near classic, the book covers the historical development of astronomy from earliest times through Copernicus to Galileo and the birth of Newton. An excellent reference.

Ridpath, Ian (ed.), *The Illustrated Encyclopedia of Astronomy and Space*, New York: Thomas Y. Crowell, c1976. 240pp., drawings/photos, color/b&w.

Concise definitions and relevant data characterizes this encyclopedia of astronomy and astronomical sciences.

Berendzen, Richard, Richard Hart and Daniel Seeley, *Man Discovers the Galaxies*, Science History Publications, a division of Neale Watson Academic Publishing Inc., 1976. 228pp., illus., photos/drawings, b&w.

A recent history of the development of thought relative to man's place in the universe and the concept of galaxies.

Short, Nicholas M., *Planetary Geology*, Englewood Cliffs, N.J.: Prentice-Hall Inc., 1975. 361pp, illus., diagrams/photos, b&w.

History of man in space, origin of planets, the moon, Mars, Venus, and some other planets--a geological perspective.

#### Astronomical Magazines

*Astronomy*, published by AstroMedia Corporation, 411 E. Mason Street, 6th floor, Milwaukee, WI 53202. Monthly, illus., color/b&w, \$18.00/yr. in Canada.

Billed as the world's most beautiful astronomy magazine, *Astronomy* is directed at the amateur, covering a wealth of topics in easy to understand, beautifully illustrated articles.



Note: Copies may be available from the Calgary Centennial Planetarium, Calgary, and the Queen Elizabeth Planetarium in Edmonton. See "Field Trips," page 29 for addresses.

*Scientific American*, published by Scientific American Inc., New York. Monthly, illus., color/b&w.

A semi-technical journal, *Scientific American* is noted for the quality of its articles by notables in a variety of fields.

Note: *Scientific American* is available through a variety of magazine outlets.

*Sky and Telescope*, published by Sky Publishing Corporation, 49 Bay State Road, Cambridge, Mass. 02138. Monthly, illus., color/b&w, \$15.00/yr. in Canada.

Designed more for the advanced amateur, *Sky and Telescope* is an excellent source of up-to-date information and projections of upcoming events.

Note: This magazine usually has to be subscribed, as it is not usually available off the magazine shelf.

#### Astronomical Atlases

Becvar, Antonin, *Atlas of the Heavens*, Publishing House of the Czechoslovak Academy of Sciences, c1962, distributed in North America by Sky Publishing Corporation, Cambridge.

A classic sky atlas for the advanced amateur, dividing the sky into fourteen sections with north polar and south polar areas.

Cherrington, Ernest H., *Exploring the Moon Through Binoculars*, McGraw-Hill Book Co., c1969. 211pp., illus., b&w photos and drawings.

Well illustrated by photographs, the text covers the features of the moon on a day by day basis as more features come into view. An excellent teacher and student reference.

Klepesta, Josef and Antonin Rukl, *Constellations (A Concise Guide in Color)*, Hamelyn, c1969, reprinted 1975. 282pp., illus., color.

Constellation maps and information on each.

Rukl, Antonin, *Moon, Mars and Venus (A Concise Guide in Color)*,  
Hamelyn, c1976. 255pp., illus., color.

General information and maps. Contains a detailed map of the moon.

Norton, Arthur P., *Norton's Star Atlas*, Sky Publishing Corporation,  
1973. 116pp.

An excellent student atlas of the night sky, prefaced with much  
basic information of interest to the amateur.

### Astronomical Societies

The Royal Astronomical Society of Canada.

Dedicated to the advancement of astronomy and related sciences,  
the R.A.S.C. has eighteen centres across Canada. The centres are usually  
comprised of a majority of amateur astronomers of all ages, with a few  
professional astronomers in the larger centres. The centres encourage  
student involvement and are able to provide assistance to the student in  
this hobby and related activities.

Two R.A.S.C. centres exist in Alberta at present, Calgary and  
Edmonton. In Calgary, contact:

Ms. Cynthia Wannamaker  
Royal Astronomical Society of Canada  
Calgary Centre  
#1006, 3524 - 31 Street N.W.  
Calgary, Alberta T2L 2A5

In Edmonton, contact:

Mr. Ivan Rogers  
Royal Astronomical Society of Canada  
Edmonton Center  
11041 - 153 Street  
Edmonton, Alberta T5P 2E3

The R.A.S.C. produces three publications of interest:

1. *The Journal of the Royal Astronomical Society of Canada*  
(periodical)
2. *The National Newsletter* (periodical)
3. *The Observer's Handbook* (annual) Cost: \$4.00 (1978)

These three publications come with membership in the R.A.S.C. However, publication #3 may be purchased separately.

*The Observer's Handbook* is a compilation of a wealth of information on astronomical phenomena. Virtually indispensable to anyone planning observing, the handbook has come to be considered by many as a "must." The handbook may usually be purchased through the secretaries of the R.A.S.C. or the National Office of the Royal Astronomical Society of Canada, 124 Merton Street, Toronto, M4S 2Z2.





CORE

8





**C8.1** A PERSPECTIVE OF THE POSITION AND MOTION OF THE EARTH IN  
SPACE IS GAINED BY CELESTIAL OBSERVATION AND MEASUREMENTS

# PRINT

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Prescribed References for Grade 8

Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough:  
McGraw-Hill, 1976.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976.





# VIDEO

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## ANNOTATION

## NOTES

THE SOLAR SYSTEM: MEASURING ITS                      124021  
DIMENSIONS

An explicit demonstration, principally graphical,  
of the triangulation techniques of measuring  
interstellar distances and the sizes of stellar  
bodies. (AVSB)

Producer: McGraw-Hill, 1973/1978  
10 min.            b/w            sound            jrsr

UNIVERSE    120618

Creates on the screen a vast, awe-inspiring  
picture of the universe as it would appear to  
the voyageur through space. (AVSB)

Producer: National Film Board, 1968/1978  
26 min.            b/w            sound            jrsr



## ANNOTATION

## NOTES

ADVENTURES IN RESEARCH 120114

This tape describes the sort of research the NASA/Ames Research Centre in California is involved in. (NASA Group) (AVSB)

Producer: NASA 197?/Perpetual  
16 min. color sound jrsr

THE APOLLO 4 MISSION 120101

Story of the assembly and launching of the first manned Apollo/Saturn V space vehicle. Shows details of stage separations, acceleration to an altitude of 11,232 miles above Earth and the effects of re-entry. (NASA Group) (AVSB)

Producer: NASA 1968/Perpetual  
16 min. color sound jrsr

APOLLO 9: SPACE DUET OF SPIDER 120104  
AND GUMDROP

Introspective view of Apollo 9 astronauts McDivitt, Scott and Schweickart before, during, and after their Earth orbital mission. The tape concentrates on the launching, rendezvous, and docking. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual  
29 min. color sound jrsr

ANNOTATIONNOTES

APOLLO 10: GREEN LIGHT FOR A 120105  
LUNAR LANDING

Features highlights of second lunar orbital mission by astronauts Stafford, Gernan, and Young, including undocking and descent of the lunar module within ten miles of the lunar surface. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual  
29 min. color sound jrsr

APOLLO 12: PINPOINT FOR SCIENCE 120107

Emphasizing the scientific studies involved to pinpoint accuracy of the landing, this tape documents the second manned lunar landing in November, 1969. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual  
28 min. color sound jrsr

APOLLO 13: HOUSTON, WE'VE GOT 120108  
A PROBLEM

Dramatic fight to return the crewmen of Apollo 13 mission safely to Earth following an explosion on board the service module. (NASA Group) (AVSB)

Producer: NASA 1970/Perpetual  
28 min. color sound jrsr

APOLLO 14: MISSION TO FRA MAURA 120109

A factual documentary account of the mission. This tape includes problems encountered on the way to the moon and how they were solved. (NASA Group) (AVSB)

Producer: NASA 1971/Perpetual  
28 min. color sound jrsr

APOLLO 15: IN THE MOUNTAINS OF 120155  
THE MOON

Story of the most ambitious and successful lunar landing missions to date in the Apollo program. Includes details of the three lunar surface scientific expeditions and the experiments in lunar orbit. (NASA Group) (AVSB)

Producer: NASA 1971/Perpetual  
28 min. color sound jrsr

ANNOTATIONNOTES

APOLLO 16: NOTHING SO HIDDEN 120110

Shows Apollo 16 astronauts Young, Madingly, and Duke and the problems encountered with the mission. (NASA Group) (AVSB)

Producer: NASA 1971/Perpetual  
26 min. color sound jrsr

APOLLO 17: ON THE SHOULDERS OF GIANTS 120111

A documentary of the Apollo 17 journey to Taurus-Littrow, the final lunar landing mission. Preparation for the Skylab and US/USSR link-up and Space Shuttle programs are described. (NASA Group) (AVSB)

Producer: NASA 1972/Perpetual  
28 min. color sound jrsr

APOLLO-SOYUZ 120112

The historic space agreement between the United States and the Soviet Union has brought about a joint space flight called Apollo/Soyuz. The purposes of the mission and the flight are discussed. (NASA Group) (AVSB)

Producer: NASA 1973/Perpetual  
12 min. color sound jrsr

CHALLENGE OF SPACE--LEGACY OF GEMINI 120142

In the perspective of a single composite mission, this documentary illustrates the major accomplishments of the Gemini two-man space flights and the significance of these flights to the Apollo Program. The film includes outstanding photography of the Earth and man in space. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual  
27 min. color sound jrsr

DEBRIEF: APOLLO 8 120103

The story of man's first journey around the moon with comments on significance of Apollo 8 flight. The tape features photographs of the Moon, the Earth, and the activities of astronauts. (NASA Group) (AVSB)

Producer: NASA 1968/Perpetual  
28 min. color sound jrsr

ANNOTATIONNOTES

DOORWAY TO TOMORROW 120120

A documentary portrait of John F. Kennedy Space Centre with emphasis on the Complex 30 "moon-port" from which the Apollo astronauts were launched to the moon. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual  
28 min. color sound jrsr

THE DREAM THAT WOULDN'T DOWN 120115

The dream of Dr. Robert Goddard, the father of modern rocketry, is explored and examined through reminiscences of Mrs. Goddard. Included are historic scenes of Dr. Goddard's early experiments and the personal commentary of Mrs. Goddard.

Producer: NASA 1965/Perpetual  
27 min. b/w sound jrsr

EAGLE HAS LANDED: FLIGHT OF 120106  
APOLLO 11

A documentary of the first NASA space mission which successfully landed Americans on the Moon and returned them safely to Earth. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual  
28 min. color sound jrsr

FLIGHT OF APOLLO 7 120102

A report on the first manned mission in the Apollo series. Major events covered are the launching, rendezvous, and docking maneuvers, television transmission, re-entry and recovery. (NASA Group) (AVSB)

Producer: NASA 1968/Perpetual  
14 min. color sound jrsr

FLIGHT OF FAITH SEVEN 120118

The story of the last flight in the one-man Project Mercury series. The tape follows astronaut Gordon Cooper from preflight training through the launching, Earth orbital flight, and recovery. (NASA Group) (AVSB)

Producer: NASA 1963/Perpetual  
28 min. color sound jrsr



ANNOTATIONNOTES

FLIGHT WITHOUT WINGS 120119

Traces the development of the wingless lifting body aero-spacecraft and relates it to future space shuttles which will return men from an Earth orbiting space station to landings on conventional runways. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual  
15 min. color sound jrsr

FOUR DAYS OF GEMINI 4 120156

Documents the first extravehicular activity of "walk in space" by an American astronaut during the Gemini 4 mission. (NASA Group) (AVSB)

Producer: NASA 1965/Perpetual  
28 min. color sound jrsr

FOUR ROOMS: EARTH VIEW 120152

Skylab was the first United States manned space program developed specifically to carry activities and equipment aimed at improving man's life on earth. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual  
28 min. color sound jrsr

FREEDOM SEVEN 120146

The first American manned space mission is the subject of this film. The training, preparation, launching and recovery of astronaut Sheppard for this first Project Mercury sub-orbital flight are included. (NASA Group) (AVSB)

Producer: NASA 1961/Perpetual  
29 min. color sound jrsr

FRIENDSHIP SEVEN 120149

A historical documentary illustrating the first American orbital space flight by astronaut Glenn in 1962. The tape provides background on Project Mercury and the tracking network planned for the one-man Mercury missions. (NASA Group) (AVSB)

Producer: NASA 1962/Perpetual  
58 min. color sound jrsr

ANNOTATIONNOTES

## JUPITER ODYSSEY

120154

A look at Jupiter and the Pioneer 10 spacecraft. This spacecraft, containing many scientific instruments, was built to study the planet in more detail. (NASA Group) (AVSB)

Producer: NASA 1974/Perpetual  
29 min. color sound jrsr

## LIFE BEYOND EARTH AND THE MIND OF MAN 120126

A panel held by NASA and Boston University discusses the search for another civilization in the galaxy of the stars. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual  
27 min. color sound jrsr

## MARINER MARS '69

120145

Reviews the principle features of Mars that were known prior to 1969 and those that were determined by the two Mariner spacecraft that passed close by in 1969. (NASA Group) (AVSB)

Producer: NASA 1971/Perpetual  
21 min. color sound jrsr

THE MISSION OF APOLLO/SOYUZ: 120150  
TEST PROJECT

The Apollo/Soyuz mission was a precedent-setting event in the sphere of international manned space flight. The film stresses the spirit of cooperation and friendship that helped make the mission a success. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual  
12 min. color sound jrsr

ANNOTATIONNOTES

NEW VIEW OF SPACE 120141

Shows the value of cameras and photography in the space program. Camera images show us more than man can perceive. Provides an important visual record of space flight. (NASA Group) (AVSB)

Producer: NASA 1972/Perpetual  
28 min. color sound jrsr

RADIO ASTRONOMY EXPLORER 120139

Describes design and function of the new Radio Astronomy Explorer, a spacecraft which will detect and relay various radio waves emitted by the Sun, Earth and Jupiter. (NASA Group) (AVSB)

Producer: NASA 1968/Perpetual  
30 min. color sound jrsr

RESEARCH PROJECT X-15 120148

The story of the development of the X-15 research airplane in a series of experimental aircraft, and the results obtained from X-15 flights. (NASA Group) (AVSB)

Producer: NASA 1966/Perpetual  
27 min. color sound jrsr

SATELLITE ASTRONOMY: PROGRESS AND PROMISE 120122

Briefly reviews the results of moon, near planet, and star exploration in the 1960's and proposals for the 1970's. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual  
17 min. color sound jrsr

SEAS OF INFINITY 120140

Reviews the planning, development, launching, and function of the Orbiting Astronomical Observatory, a series of orbiting telescopes used to study our solar system and stars. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual  
15 min. color sound jrsr

ANNOTATIONNOTES

## SEEDS OF DISCOVERY

120143

An introduction to planetary exploration and scientific satellite research planned for the 1970's. The film briefly describes plans for Mariner fly-bys of Mars. (NASA Group) (AVSB)

Producer: NASA 1970/Perpetual  
28 min. color sound jrsr

## SMALL STEPS, GIANT STRIDES

120159

A recap of two decades of space exploration that has brought about research leading to technical advancements in aviation, computers, communication, weather forecasting, and many other areas. (NASA Group) (AVSB)

Producer: NASA 1973/Perpetual  
28 min. color sound jrsr

SPACE IN THE SEVENTIES: THE  
KNOWLEDGE BANK

120160

This tape takes a broad look at physics and astronomy research performed in the laboratory of space. (NASA Group) (AVSB)

Producer: NASA 1971/Perpetual  
25 min. color sound jrsr

SPACE IN THE SEVENTIES: MAN IN  
SPACE--THE SECOND DECADE

120147

Reviews the achievements of manned space flight during the 1970's. Projects that are technically feasible and desirable beyond 1980 are included. (NASA Group) (AVSB)

Producer: NASA 1971/Perpetual  
Series: Space in the Seventies  
28 min. color sound jrsr

ANNOTATIONNOTES

## SPACE NAVIGATION

120129

Explains the principles of charting a course in space, showing navigational techniques of the future.

Emphasis is on the Apollo program.

(NASA Group) (AVSB)

Producer: NASA 1967/Perpetual

21 min. color sound jrsr

## THE TIME OF APOLLO

120113

In the year 1961, the President of the United States set forth the task: "This nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to Earth." (NASA Group) (AVSB)

Producer: NASA 1977/Perpetual

28 min. color sound jrsr

## TRIAL BALANCE

120134

Presents recent knowledge in the field of space science, particularly that gained through the analysis of information from spacecraft. (NASA Group) (AVSB)

Producer: NASA 1965/Perpetual

27 min. color sound jrsr

## UNIVERSE ON A SCRATCH PAD

120132

Problems posed and solved by the modern-day astrophysicist are highlighted in this program. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual

29 min. b/w sound jrsr

ANNOTATION

NOTES

THE VITAL LINK

120125

A documentary view of NASA's world-wide tracking and communications system for manned and unmanned missions. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual  
29 min. color sound jrsr

WHO'S OUT THERE?

120135

A portrayal of a contemporary scientific belief that there are intelligent civilizations in the universe. Narrated by Orson Welles. (NASA Group) (AVSB)

Producer: NASA 1976/Perpetual  
30 min. color sound jrsr

WITHIN THIS DECADE: AMERICA IN SPACE 120121

Brief overview of NASA's first five years, showing the growth of America's space program from Explorer 1 through early phases of the Apollo program for manned exploration of the moon. (NASA Group) (AVSB)

Producer: NASA 1963/Perpetual  
14 min. color sound jrsr



# FILM

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## ANNOTATION

## NOTES

### CHARTING THE UNIVERSE

B1825

Shows an astronomer at work inside the giant observatory at Mount Palomar and illustrates the working of some of the mechanisms. Explains how the new science of radio-astronomy has brought about important discoveries. Shows how physicists interpret spectrum photographs.

Producer: EBF, 1963

13 min.      color      sound      jrsrca      \$2.90

### THE ISAAC NEWTON TELESCOPE

PB109

Representing a big advance in astronomy is the largest optical telescope in Europe, the ninety-eight inch Isaac Newton Telescope, now housed in the grounds of Heretmonceux Castle, the home of the Royal Greenwich Observatory.

Producer: BIS, 19?

18 min.      color      sound      jrsrca      \$2.50

### THE RADIO SKY

PC71

Britain's part in the development of the radio telescope in the service of astronomy and communications.

Producer: Viewpoint Productions, 1966

28 min.      color      sound      jrsrca      \$2.50

### STARS AND STAR SYSTEMS

B2431

Illustrates the work of astronomers with the reflecting and the radio telescope. Shows how astronomers rely on the theoretical analysis as well as direct observation for answers to the mysteries of the universe.

Producer: EBF, 1961

16 min.      b/w      sound      jrsrca      \$2.50



ANNOTATIONNOTES

## VAN ALLEN RADIATION BELTS

B2430

Dr. Van Allen and other scientists explain methods of obtaining information in space flights. Models and animation are used to relate earth, sun magnetosphere, and radiation belts. Live photography and models illustrate preparations, launching, and orbit of a space vehicle designed to explore the radiation regions.

Producer: EBF, 1963

17 min.      color      sound      jrsrca      \$4.00

## WHY EXPLORE SPACE?

B1831

What are the values of space research? How does it relate to world problems? What are the goals of science? How will new knowledge change your life? The theme is brought to life through a documented event: the flight of John Glenn, first American to circle the earth in space.

Producer: Churchill Films, 1962

16 min:      color      sound      ejrsr      \$3.40

## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT # : \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## C8.2 VARIOUS THEORIES ATTEMPT TO EXPLAIN THE ORIGIN OF THE SOLAR SYSTEM AND THE UNIVERSE

# PRINT

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### Prescribed References for Grade 8

Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough:  
McGraw-Hill, 1976.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976.

NOTE: Teachers are reminded to review Statement B, "Controversial Issues in the Classroom" found on page 12 of the Curriculum Guide for Junior High School Science 1978.

The Science Coordinating Committee of the Curriculum Branch is currently reviewing some locally developed material intended to be of use in teaching this concept. It, along with other material, may be added to this listing in the future.

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## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

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### FORMAT

CATALOGUE NO.

SOURCE

[illegible]





## C8.3 THE SUN IS A TYPICAL STAR

# PRINT

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### Prescribed References for Grade 8

Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough:  
McGraw-Hill, 1976.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976.



## ANNOTATION

## NOTES

ORBITING SOLAR OBSERVATORY 120151

Describes the orbiting solar observatory spacecraft which is designed to gather information concerning the sun's effect on the earth.  
(NASA Group) (AVSB)

Producer: NASA 1962/Perpetual  
25 min. color sound jrsr

RADIO ASTRONOMY EXPLORER 120139

Describes design and function of the new Radio Astronomy Explorer, a spacecraft which will detect and relay various radio waves emitted by the Sun, Earth and Jupiter. (NASA Group)  
(AVSB)

Producer: NASA 1968/Perpetual  
30 min. color sound jrsr

UNIVERSE ON A SCRATCH PAD 120132

Problems posed and solved by the modern-day astrophysicist are highlighted in this program.  
(NASA Group) (AVSB)

Producer: NASA 1967/Perpetual  
29 min. b/w sound jrsr



# FILM

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## ANNOTATION

## NOTES

ECLIPSES OF THE SUN AND MOON B2258

Stop-motion and time-lapse photography are used to bring a solar eclipse to the screen. Shows NASA scientists studying the solar eclipse from a high altitude jet flight over Canada. An animation sequence reveals the cause and effect of this dramatic phenomenon--a total solar eclipse.

Producer: EBF, 1965  
11 min. color sound srca \$2.70

THE NEAREST STAR C2146

The film explains how present-day astronomers are expanding their knowledge of the sun: how they watch it, measure it, analyze its structure, and the complex forces behind its brilliant glare. New film footage from all over the world has been specifically gathered for this purpose in order to convey to the viewer the synoptic aspect of modern scientific research on the sun and the dimension and scope of present inquiry and investigation.

Producer: McGraw-Hill, 1960  
27 min. color sound srca \$3.30



## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

### FORMAT

CATALOGUE NO.

SOURCE

[illegible]





## C8.4 SOLAR GRAVITY AND PLANETARY INERTIA MAINTAIN A SYSTEM OF PLANETS IN ORBIT

# PRINT

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### Prescribed References for Grade 8

Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough:  
McGraw-Hill, 1976.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976.



# VIDEO

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## ANNOTATION

## NOTES

PLANET OF MAN: THE COSMIC CONNECTION 201010

Meteorite bombardment is now known to be common to all planets in the solar system. Meteorite impacts on the surfaces of the earth is the subject of this program.

Producer: Ontario Educational Communications

Authority, 1976/March 1981

30 min.      color      sound      jrsr



## ANNOTATION

## NOTES

MARS--IS THERE LIFE? 160330

Students are introduced to the possible past history of Mars and its present surface topography--volcanoes, ice caps, streambeds, impact craters, canyons and wind-eroded surfaces. The Viking Lander and its biology experiments are discussed in relationship to the search for life on Mars. Students are asked to consider life forms that might be able to survive on Mars and the potential significance of their discovery. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual  
14 min. color sound jrsr

MARS--THE SEARCH BEGINS 120160

Review of the knowledge gained from over 7,000 pictures obtained by Mariner 9. The film focuses on the possibility of life on Mars and offers graphic portrayals of life forms that could exist there. (NASA Group) (AVSB)

Producer: NASA 1973/Perpetual  
29 min. color sound jrsr

THE MOON: AN EMERGING PLANET 120137

The Apollo program has given a new insight into the violent and dynamic history of the moon. This program compares similarities in the earth's geological make-up. (NASA Group) (AVSB)

Producer: NASA 1972/Perpetual  
16 min. color sound jrsr

RADIO ASTRONOMY EXPLORER 120139

Describes design and function of the new Radio Astronomy Explorer, a spacecraft which will detect and relay various radio waves emitted by the Sun, Earth and Jupiter. (NASA Group) (AVSB)

Producer: NASA 1968/Perpetual  
30 min. color sound jrsr

ANNOTATIONNOTES

READING THE MOON'S SECRETS 160301

This film is divided into ten short segments, each treating an important aspect of lunar knowledge, using Apollo-gained data as appropriate. It is designed to be used as a teaching film in science classes in secondary schools at the seventh grade level and above. The student is expected to answer questions designed into the film in each segment. A discussion period will follow the screening of the film and will be based on an accompanying teacher's guide which contains the major part of the instruction related to the film. (NASA Group) (AVSB)

Producer: NASA 1976/Perpetual  
18 min. color sound jrsr

SATELLITE ASTRONOMY: PROGRESS 120122  
AND PROMISE

Briefly reviews the results of moon, near planet, and star exploration in the 1960's and proposals for the 1970's. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual  
17 min. color sound jrsr

SEAS OF INFINITY 120140

Reviews the planning, development, launching and function of the Orbiting Astronomical Observatory, a series of orbiting telescopes used to study our solar system and stars. (NASA Group) (AVSB)

Producer: NASA 1969/Perpetual  
15 min. color sound jrsr

SEEDS OF DISCOVERY 120143

An introduction to planetary exploration and scientific satellite research planned for the 1970's. The film briefly describes plans for Mariner fly-bys of Mars. (NASA Group) (AVSB)

Producer: NASA 1970/Perpetual  
28 min. color sound jrsr



ANNOTATION

NOTES

SPACE IN THE SEVENTIES: THE 120160  
KNOWLEDGE BANK

This tape takes a broad look at physics and astronomy research performed in the laboratory of space. (NASA Group) (AVSB)

Producer: NASA 1971/Perpetual  
Series: Space in the Seventies  
25 min. color sound jrsr

TRIAL BALANCE 120134

Presents recent knowledge in the field of space science, particularly that gained through analysis of information from spacecraft. (NASA Group) (AVSB)

Producer: NASA 1965/Perpetual  
27 min. color sound jrsr

UNIVERSE ON A SCRATCH PAD 120132

Problems posed and solved by the modern-day astrophysicist are highlighted in this program. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual  
29 min. b/w sound jrsr



# FILM

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## ANNOTATION

## NOTES

ECLIPSES OF THE SUN AND MOON

B2258

Stop-motion and time-lapse photography are used to bring a solar eclipse to the screen. Shows NASA scientists studying the solar eclipse from a high altitude jet flight over Canada. An animation sequence reveals the cause and effect of this dramatic phenomenon--a total solar eclipse.

Producer: EBF, 1965

11 min.      color      sound      srca      \$2.70

THE FORCE OF GRAVITY

C1595

The nature of gravitation from early times to the present, as seen by man, is discussed. Tells how the gravitational field accounts for the motions of planets: Newtonian and Einsteinian theories and gravitational problems of the space age.

Producer: McGraw-Hill, 1961

27 min.      color      sound      jrsrca      \$5.70

JUPITER, SATURN, AND MARS IN MOTION

A2435

Time-lapse photographs taken through the 60-inch telescope, the Mount Wilson Observatory, illustrate significant characteristics of the planets Jupiter, Saturn and Mars. Shows approximately ten hours' rotation time of the planet Jupiter, including a complete orbit of Jupiter's satellite. Film sequences of Saturn demonstrate how weather conditions determine the efficiency of telescope observation. Photographs of Mars show its polar cap and planet-wide dust storm.

Producer: EBF, 1962

8 min.      color      sound      jrsrca      \$2.50

ANNOTATION

NOTES

PLANETS IN ORBIT: THE LAWS OF KEPLER A2434

The film traces a brief history of man's earliest observations and beliefs about the universe and then goes on to show how Johannes Kepler made three discoveries that revolutionized astronomy. Explanation of Kepler's three laws is visualized in animated sequences.

Producer: EBF, 1961

10 min.      b/w      sound      jrsrca      \$2.50

## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## C8.5 THE SURFACE OF THE EARTH AND ITS INHABITANTS ARE SURROUNDED BY AN ATMOSPHERE OF AIR

# PRINT

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### Prescribed References for Grade 8

Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough:  
McGraw-Hill, 1976.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976.





## ANNOTATION

## NOTES

HURRICANE BELOW

160313

The first of a series of films on disaster phenomena (created by the elements or by man) and NASA's contribution of providing data to reduce casualties and property loss through observations from space. (NASA Group) (AVSB)

Producer: NASA 197/Perpetual

14 min.      color      sound      jrsl

1911  
1912

1913

# FILM

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## ANNOTATION

## NOTES

### AROUND A BIG LAKE

B2009

Traces the effects of weather through the seasons on the environmental conditions in and around a typical large lake. Thermal stratification, the thermocline, and winter stagnation are described. Life forms typical of wave-swept shores, beaches, islands, the open water, and sheltered bays and coves are examined in detail. Particular attention is focused on adaptations important for survival in the various habitats as well as the plant based, interrelated food chains.

Producer: IFB, 1963

17 min.      color      sound      jrsrca      \$3.30

### THE ORIGINS OF WEATHER

B2031

Illustrates from the vantage of off-the-earth observation the factors that produce the climate we know. Animation illustrates the earth's heat exchange, the effect of the sun's heat, the movement of air masses, and resulting weather is then shown in actuality. Awards: Columbus, Ohio; Canada; La Plata, Argentina.

Producer: NFB, 1962

12 min.      color      sound      ejrsr      \$2.50

ANNOTATIONNOTES

OUR ENDANGERED ENVIRONMENT: AIR B2872

A film to acquaint young people with the composition and function of air and the sources and effects of pollution. Explains the responsibility of the individual and tells how the student can help.

Producer: Environmental Films, 1971  
17 min. color sound ejr \$2.50

SEA SURFACE METEOROLOGY C2942

Concerned with the role played by the oceans in the formation of rain, in particular, with the transfer of large condensation nuclei and electrical charges from the sea surface to the atmosphere. These phenomena are illustrated, as well as a volcano erupting at sea surface, a possible consequence of the transfer process.

Producer: Universal Education and Visual Arts,  
1967  
24 min. b/w sound sc \$3.20

SNOW B1633

A study of snow. From the time it falls until the time it melts, snow ages or "ripens." Snow's whiteness has a purpose--to reflect rather than absorb rays of winter sun. Shows flakes forming in upper atmosphere, frost crystals joining into flakes, and settling on the ground. Illustrates the smooth crystals of "powder" snow and the congealing crystals of "corn" snow.

Producer: NFB, 1961  
13 min. b/w sound jrsrca \$2.50

WHAT MAKES CLOUDS? B2546

A close look is taken at fog and at a cloud, noting that both are composed of droplets of water. An experiment with condensation produces fog in a bottle, and the film concludes with an investigation of how condensation occurs in nature.

Producer: EBF, 1965  
12 min. color sound jrsr \$5.20

ANNOTATIONNOTES

## WHAT MAKES THE WIND BLOW?

B2439

Possible explanations for the cause of a typical inshore breeze are tried out in the laboratory, then double-checked in nature. Pressure differences are found to be associated with normal daytime air movements. Explanations are given for violent windstorms which blow off shore.

Producer: EBF, 1965

16 min.      color      sound      jrsrca      \$4.00

## WINDS AND THEIR CAUSES

A697

About the discovery of convection currents around an electric lamp and a heated radiator. Animated diagrams explain the causes of heat currents, air bumps, and thunderstorms. A sailboat illustrates the effects of offshore and on-shore winds and causes of easterly and westerly winds are demonstrated.

Producer: Coronet, 1948

11 min.      color      sound      jrsr      \$2.50





## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]



**C8.6** LOCAL CONDITIONS IN THE ATMOSPHERE  
ARE REFERRED TO AS WEATHER

**PRINT**

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Prescribed References for Grade 8

Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough:  
McGraw-Hill, 1976.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976.



## ANNOTATION

## NOTES

TORNADO BELOW

160314

This film involves a young female student pilot who almost gets caught in the path of a tornado on her first solo flight. The film explains how tornados are formed, their characteristics, and the devastating destruction they cause. It also relates to work being done in the laboratory to better understand the dreaded phenomenon and the importance of information from early warning weather satellites in an attempt to reduce casualties. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual

14 min.      color      sound      jrsr



# FILM

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## ANNOTATION

## NOTES

### ABOVE THE HORIZON

C2206

An exploration of weather and how man may one day learn to control it. Rainmaking is not always a success but in this film you see that it can be done. Views of the geysers of the sun, of bright streamers of northern lights, of wind-stirred clouds, and the awesome fury of a hurricane are shown filmed at close range by a Navy weather plane.

Producer: NFB, 1965

21 min.      color      sound      jrsrca      \$2.70

### AROUND A BIG LAKE

B2009

Traces the effects of weather through the seasons on the environmental conditions in and around a typical large lake. Thermal stratification, the thermocline, and winter stagnation are described. Life forms typical of wave-swept shores, beaches, islands, the open water, and sheltered bays and coves are examined in detail. Particular attention is focused on adaptations important for survival in the various habitats as well as the plant based, interrelated food chains.

Producer: IFB, 1963

17 min.      color      sound      jrsrca      \$3.30

### THE ORIGINS OF WEATHER

B2031

Illustrates from the vantage of off-the-earth observation the factors that produce the climate we know. Animation illustrates the earth's heat exchange, the effect of the sun's heat, the movement of air masses, and resulting weather is then shown in actuality. Awards: Columbus, Ohio; Canada; La Plata, Argentina.

Producer: NFB, 1962

12 min.      color      sound      ejrsr      \$2.50



ANNOTATIONNOTES

SNOW

B1633

A study of snow. From the time it falls until the time it melts, snow ages or "ripens." Snow's whiteness has a purpose--to reflect rather than absorb rays of winter sun. Shows flakes forming in upper atmosphere, frost crystals joining into flakes, and settling on the ground. Illustrates the smooth crystals of "powder" snow and the congealing crystals of "corn" snow.

Producer: NFB, 1961

13 min.      b/w                  sound                  jrsrca                  \$2.50

WHAT MAKES CLOUDS?

B2546

A close look is taken at fog and at a cloud, noting that both are composed of droplets of water. An experiment with condensation produces fog in a bottle, and the film concludes with an investigation of how condensation occurs in nature.

Producer: EBF, 1965

12 min.      color                  sound                  jrsr                  \$5.20

## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

### FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## C8.7 THE CRUST OF THE EARTH IS FORMED OF ROCKS

# PRINT

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### Prescribed References for Grade 8

Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough:  
McGraw-Hill, 1976.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976.



# VIDEO

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## ANNOTATION

## NOTES

PLANET OF MAN: ANIMAL, VEGETABLE 201006  
MINERAL

The chemical and physical properties of minerals was necessary information for fashioning tools, weapons and art of early civilizations. Looks at the work of modern craftsmen such as the diamond cutter.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981

Series: Planet of Man  
30 min. color sound jrsr

PLANET OF MAN: CHALLENGE OF THE DEEP 201008

A world hungry for mineral resources has turned its search to the oceans. This program focuses on the process of sediment accumulation on ocean floors.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981

Series: Planet of Man  
30 min. color sound jrsr

PLANET OF MAN: THE INNER LIMIT 201009

This program takes viewers on a journey to the center of the earth, through the outer crust, a denser underlayer, a hot molten core, and a solid center.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981

Series: Planet of Man  
30 min. color sound jrsr





## ANNOTATION

## NOTES

THE FRACTURED LOOK

120166

Examines the ways in which Landsat may serve as a tool in searching for minerals and monitoring geological hazards. The satellite can reveal fractures or faults that may indicate past, present and potential earthquake activity. Faults are pathways that minerals used to make their way from deep within the Earth to its surface. By revealing fractures and rock alterations, Landsat imagery can contribute to exploration for mineral resources. (NASA Group) (AVSB)

Producer: NASA 197/Perpetual

15 min.      color      sound      jrsr



# FILM

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## ANNOTATION

## NOTES

THE BEACH: A RIVER OF SAND C2419

An elementary analysis of currents produced by waves proves that most of the pronounced net movement of sand is usually along the shore. The film demonstrates that the beach is thus a river of sand, existing between land and breaking waves.

Producer: EBF, 1965  
20 min. color sound jrsr \$5.40

DECISION TO DRILL C1851

A film about the people who search and drill for oil and natural gas in western Canada. It tells of the lone geologist in the mountains, the surveyor cutting through virgin bush, the seismic crews who chart rock formations deep beneath the earth's crust, and the drillers with their multi-ton rigs.

Producer: Imperial Oil, 1963  
27 min. color sound jrsrca \$2.50

THE HIDDEN EARTH C2143

The structure of solid earth is analyzed from the crust through the mantle to the central core. The dynamic quality of the earth is demonstrated through the analysis of earthquakes and volcanoes. Application of seismology to the study of other planets is shown.

Producer: McGraw-Hill, 1960  
Series: Planet Earth  
27 min. color sound jrsrca \$3.30

ANNOTATIONNOTES

## METAL IN HARMONY

PB25

The great amount of electrical energy required to produce aluminum is available in Scotland, and it is here that bauxite from Ghana is transformed into a useful metal. The film portrays some of the processes necessary before aluminum finds its way into a wide variety of items used in everyday life.

Producer: Anglo-Scottish Pictures, 1962  
22 min.      color      sound      jrsrca      \$2.50

## RICHES OF THE EARTH

B2646

Animation depicts the formation through geological ages by fire and water, wind and ice of the earth's crust which holds our wealth of minerals, oil, coal, arable land, and even our water power. Awards: Venice, Padua, Italy.

Producer: NFB, 1966  
16 min.      color      sound      g      \$3.40

## ROCKS THAT FORM ON THE EARTH'S SURFACE

B2422

Designed to help students investigate sedimentary rocks, to discover where they come from, what they are made of, and how they are formed. Explores some of the ways in which sediments are produced, transported, accumulated, and hardened into sedimentary rock.

Producer: EBF, 1965  
16 min.      color      sound      jrsr      \$4.00

## ROCKS THAT ORIGINATE UNDERGROUND

C2417

Since igneous and metamorphic rocks are not produced by surface processes, the film suggests they must be formed within the earth's crust. Conditions are reconstructed by use of indirect evidence--the fact that both types of rock are composed of intergrown crystalline mineral grains.

Producer: EBF, 1966  
23 min.      color      sound      jrsr      \$5.40

## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## C8.8 THE CRUST OF THE EARTH IS CONSTANTLY BEING CHANGED

# PRINT

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### Prescribed References for Grade 8

Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough:  
McGraw-Hill, 1976.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976.





# VIDEO

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## ANNOTATION

## NOTES

EARTH: THE RESTLESS PLANET 133702

A look at one of the most awesome forces in nature--the volcano. Three active volcanoes are shown: the Hawaiian volcano, Kilauea; Mount Etan in Sicily; and the Nyiragongo in Zaire. (National Geographic Group)

Producer: National Geographic Society,  
1974/April 30, 1979  
25 min. color sound sr

ENVIRONMENTAL SCIENCE: CLIMATE 132306  
AND SOILS

The climatic forces of wind and weather were instrumental in breaking down the rocks into soil.

Producer: Ontario Educational Communications  
Authority, 1976/March 1980  
Series: Environmental Science  
20 min. b/w sound jrsr

LAY OF THE LAND: ENTERING THE 120501  
GATEWAY

This program deals specifically with shield, parkland, northern sea, lakes, forest, and eskers. (AVSB)

Producer: Alberta School Broadcasts,  
1973/Unlimited  
Series: Lay of the Land  
30 min. color sound uejr

LAY OF THE LAND: SOLID LANDS 120502

Looks at the high lands and how they came to be. An examination of the changes from day to day help to answer the question of how these lands took their shape. (AVSB)

Producer: Alberta School Broadcasts,  
1973/Unlimited  
Series: Lay of the Land  
30 min. color sound uejr

ANNOTATIONNOTES

OUTDOORS UNLIMITED: BADLANDS 123504

A look at the animals and topography of the land from twenty million years ago to the present day. (AVSB)

Producer: Alberta School Broadcasts,  
1971/Unlimited

Series: Outdoors Unlimited  
14 min. b/w sound uejrsr

PLANET OF MAN: BEYOND A DOUBT, 201012  
REVOLUTION

In 1910, Alfred Wegener first proposed the concept of continental drift--the theory of a super-continent breaking up two hundred million years ago with the fragments drifting to their present places.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981  
30 min. color sound jrsr

PLANET OF MAN: THE COSMIC CONNECTION 201010

Meteorite bombardment is now known to be common to all planets in the solar system. Meteorite impacts on the surfaces of the earth is the subject of this program.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981

Series: Planet of Man  
30 min. color sound jrsr

PLANET OF MAN: THE FIRE WITHIN 201003

An account of the various types of volcanic activity. Divers risk their lives to capture on camera the effects of molten lava bursting open upon the ocean's floor.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981

Series: Planet of Man  
30 min. color sound jrsr

ANNOTATION

NOTES

PLANET OF MAN: JIGSAW FIT 201002

The key to many geological questions is believed to lie in the theory of plate tectonics which suggests that the earth's crust is composed of six major plates which are slowly on the move.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981

Series: Planet of Man  
30 min. color sound jrsr

PLANET OF MAN: MOUNTAIN HERITAGE, 201005  
THE APPALACHIANS

Shrinking seas, colliding continental masses, volcanism, mountain building--all are inscribed in a catalogue of continuous change preserved in the rock of Appalachia.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981

Series: Planet of Man  
30 min. color sound jrsr

PLANET OF MAN: SHIELD OF PLENTY 201007

The precambrian period ended before the first arrival of plants and animals, by which time ancient mountains had already been worn almost to plain.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981

Series: Planet of Man  
30 min. color sound jrsr

PLANET OF MAN: TRAIL OF THE ICE 201004  
AGE BLUES

In words, song, film and graphics, the story of glaciation, its effects on the features of North America, and man's adaptation to the subsequent landforms is portrayed.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981

Series: Planet of Man  
30 min. color sound jrsr

ANNOTATION

NOTES

PLANET OF MAN: THE UNEVENTFUL DAY 201011

The face of the Earth is undergoing continuous alteration but in ways so slow that change for the most part remains invisible. This program looks at the processes of weathering.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981

Series: Planet of Man

30 min. color sound jrsr

## ANNOTATION

## NOTES

### EARTHQUAKE BELOW

160311

This film takes us to lovely San Francisco, a shining jewel of a city that lives in constant threat of earthquake. Through a look back in time, we see how earthquakes shattered the San Francisco of 1906, and we experience the agony of a more recent earthquake in suburban Los Angeles. We learn how earthquakes are caused, and discover through NASA pictures the extensive fault systems that are prime targets for earthquakes of the future. (NASA Group) (AVSB)

Producer: NASA 197/Perpetual

27 min. color sound jrsr

### THE FRACTURED LOOK

120166

Examines the ways in which Landsat may serve as a tool in searching for minerals and monitoring geological hazards. The satellite can reveal fractures or faults that may indicate past, present and potential earthquake activity. Faults are pathways that minerals used to make their way from deep within the Earth to its surface. By revealing fractures and rock alterations, Landsat imagery can contribute to exploration for mineral resources. (NASA Group) (AVSB)

Producer: NASA 197/Perpetual

15 min. color sound jrsr





# FILM

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## ANNOTATION

## NOTES

THE BEACH: A RIVER OF SAND C2419

An elementary analysis of currents produced by waves proves that most of the pronounced net movement of sand is usually along the shore. The film demonstrates that the beach is thus a river of sand, existing between land and breaking waves.

Producer: EBF, 1965  
20 min. color sound jrsr \$5.40

EROSION: LEVELLING THE LAND B2368

This film examines the surface processes of weathering, erosion, and deposition. Rocks gradually rust, crack, disintegrate, and decompose. This loosened rock debris can go only in one direction--down. The net effects of transferring rock material from high ground to basin areas is always in the direction of levelling the land. The film ends with the question: If all the land above sea level is constantly being washed into the oceans, why, then, are not all land surfaces not only flat, but also level with the seas?

Producer: EBF, 1964  
14 min. color sound jrsrca \$3.40

GLACIATION B2301

Opens with a discussion of the Great Ice Age; then, in an animated sequence, demonstrates how snow hardens into ice and ice flows under stress, and ends with scenes of a glacier and its effect on terrain and climate.

Producer: NFB, 1965  
15 min. color sound g \$2.50

ANNOTATIONNOTES

## GLACIER ON THE MOVE

A3410

Still photographs and time-lapse photography reveal the progress of a glacier as it moves down its valley. Footage was gathered over a four-year period at the Athabasca Glacier.

Producer: EBFC, 19?

11 min.      color      sound      jrsra      \$3.00

## GLACIERS

B2722

Tells how glaciers are formed and shows glaciers from Mount Rainier to Washington to Alaska. Scenes of the ice sheets of Antarctica are shown. Relates the present warm era to the Ice Ages of the past.

Producer: Northern, 1960

15 min.      color      sound      jra      \$4.00

## THE HIDDEN EARTH

C2143

The structure of solid earth is analyzed from the crust through the mantle to the central core. The dynamic quality of the earth is demonstrated through the analysis of earthquakes and volcanoes. Application of seismology to the study of other planets is shown.

Producer: McGraw-Hill, 1960

27 min.      color      sound      jrsrca      \$3.30

## HOW SOLID IS ROCK?

C2594

Designed to help students grasp the concept that the earth, when considered over the long span of geologic time, behaves much like a softball. Field evidence, confirmed by laboratory experiments, show that underground rock can both break and flow, even at the same time, when under great pressure and high temperature.

Producer: EBF, 1968

22 min.      color      sound      jrsr      \$5.90

ANNOTATIONNOTES

## OUR SOIL RESOURCES

A546

(Second edition) Describes the formation of soil, four soil zones of the U.S. and the damage to which they are subject, and three important ways to stop soil erosion. How rock becomes soil is shown and the characteristic vegetation of each soil zone and principal cultivated crops.

Producer: EBF, 1966  
10 min.      b/w              sound              ejrsr              \$2.50

## RICHERS OF THE EARTH

B2646

Animation depicts the formation through geological ages by fire and water, wind and ice of the earth's crust which holds our wealth of minerals, oil, coal, arable land, and even our water power.  
Awards: Venice, Padua, Italy.

Producer: NFB, 1966  
16 min.      color              sound              g              \$3.40

## SECRETS OF THE ICE

C2309

The role of snow and ice on man's physical environment is explained. Mountain glaciers and the ice fields of Greenland and Antarctica are explored with research parties. The relationship between glaciology on the one hand, and oceanography and weather on the other is explained.

Producer: McGraw-Hill, 1961  
27 min.      color              sound              jrsrca              \$3.70

## WAVES ON WATER

B2426

With the help of large experimental tanks, the film explains how waves are created and demonstrates that even though waves may travel at a good rate of speed, the water does not move. It also points out that high-energy waves are created by underwater earthquakes.

Producer: University of Washington/EBF, 1965  
16 min.      color              sound              jrsrca              \$4.00

ANNOTATION

NOTES

WHY DO WE STILL HAVE MOUNTAINS?

C2367

The struggle between weathering and erosion and the deformation of the earth's crust is investigated. Simple measurements show that erosion should long ago have reduced North America almost to sea level. This apparent paradox is explored by looking at the very nature of mountains. The film concludes with a look at careful bench mark measurements over a 40-year period. These bench marks prove that, in certain places, uplift is occurring today at rates which could produce mountains in a geologically short time.

Producer: EBF, 1964

20 min.      color      sound      jrsrca      \$5.40



# ELECTIVES

## 8






## E8.1 MATERIALS FROM THE CRUST HAVE HAD AN IMPORTANT INFLUENCE ON MANKIND'S DAILY LIVING

# PRINT

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### I. Prescribed References for Grade 8

Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough: McGraw-Hill, 1976.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*, Markham: Houghton-Mifflin, 1976.

### II. Additional Textual Resources for Grade 8

Bishop, M., et al, *Focus on Earth Sciences*, 2nd edition, Agincourt: Charles E. Merrill, 1976. (Content items 1 and 2, pp. 142-53)

Hibbs, A. R. and A. F. Eiss, *The Earth--Space Sciences*, Toronto: Doubleday Canada, 1971. (Content items 1 and 2, pp. 446-57)

Interaction Science Curriculum Project, *Interaction of Earth and Time*, Agincourt: Gage, 1974. (Content item 2, pp. 228-29)

### III. Other Print Resources

Available from: Surveys Branch  
Alberta Transportation  
Transportation Building  
9630 - 106 Street  
Edmonton, Alberta T5K 2B8

1. *Alberta Resource Maps: Energy and Mineral Resources*, 1974-1976. Series of 10 maps, 21 cm. x 28 cm., \$.20 each. (Content item 1)
2. *Alberta Transportation Maps: Surface and Mineral Resources Map*. Four maps, 55 cm. x 85 cm., color, \$.20 each. (Content item 1)
3. *Searching for Structure: Rocks, Minerals and Fossils*, Toronto: Holt, Rinehart and Winston, 1973. (Content items 1 and 2, pp. 3-65)
4. Thurber, Walter A. et al, *Exploring Earth Science--Geology*, Toronto: Allyn and Bacon, 1976. (Content item 2, pp. 83-95)





# VIDEO

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## ANNOTATION

## NOTES

ENERGY: THE CONSUMPTION ASSUMPTION 125101

This program examines the flow of various kinds of energy in primitive societies and the wasteful consumption in the industrial world. (AVSB)

Producer: Alberta School Broadcasts,  
1975/Unlimited

Series: Energy  
15 min. color sound jrsr

ENERGY: SOURCES OF RESOURCES 125103

Energy that is stored beneath the earth's surface and the actual stores of this energy are examined. (AVSB)

Producer: Alberta School Broadcasts,  
1974/Unlimited

Series: Energy  
30 min. color sound jrsr

PLANET OF MAN: THE INNER LIMIT 201009

This program takes viewers on a journey to the center of the earth, through the outer crust, a denser underlayer, a hot molten core, and a solid center.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981

Series: Planet of Man  
30 min. color sound jrsr



## ANNOTATION

## NOTES

THE FRACTURED LOOK

120166

Examines the ways in which Landsat may serve as a tool in searching for minerals and monitoring geological hazards. The satellite can reveal fractures or faults that may indicate past, present and potential earthquake activity. Faults are pathways that minerals used to make their way from deep within the Earth to its surface. By revealing fractures and rock alterations, Landsat imagery can contribute to exploration for mineral resources. (NASA Group) (AVSB)

Producer: NASA 197/Perpetual

15 min.      color      sound      jrsr

ACMA  
EAST

# FILM

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## ANNOTATION

## NOTES

### DECISION TO DRILL

C1851

A film about the people who search and drill for oil and natural gas in western Canada. It tells of the lone geologist in the mountains, the surveyor cutting through virgin bush, the seismic crews who chart rock formations deep beneath the earth's crust, and the drillers with their multi-ton rigs.

Producer: Imperial Oil, 1963

27 min.      color      sound      jrsrca      \$2.50

### METAL IN HARMONY

PB25

The great amount of electrical energy required to produce aluminum is available in Scotland, and it is here that bauxite from Ghana is transformed into a useful metal. The film portrays some of the processes necessary before aluminum finds its way into a wide variety of items used in everyday life.

Producer: Anglo-Scottish Pictures, 1962

22 min.      color      sound      jrsrca      \$2.50

1100

1100



## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

### FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## E8.2 EVIDENCE FOR DETERMINING THE PAST HISTORY OF THE EARTH COMES FROM A STUDY OF THE CRUST

# PRINT

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### I. Prescribed References for Grade 8

Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough:  
McGraw-Hill, 1976.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976.

### II. Additional Textual Resources for Grade 8

Bishop, M. et al, *Focus on Earth Science*, 2nd edition, Agincourt:  
Charles E. Merrill, 1976. (Content items 1 and 2, pp. 392-407)

Harris, M. F., et al, *Investigating the Earth*, Rev. ed., Markham:  
Houghton-Mifflin, 1973. (Content items 1, pp. 324-62; 2, pp.  
369-78)

Hibbs, A. R., and A. F. Eiss, *The Earth--Space Sciences*, Toronto:  
Doubleday Canada, 1971. (Content items 1, pp. 364-77; 2, pp.  
430-43)

Interaction Science Curriculum Project, *Interaction of Earth and Time*,  
Agincourt: Gage, 1974. (Content items 1 and 2, pp. 190-204)

Ramsey, W. L. et al, *Modern Earth Science*, Toronto: Holt, Rinehart  
and Winston, 1973. (Content items 1 and 2, pp. 376-91)

### III. Other Print Resources

*Searching for Structure: Rocks, Minerals and Fossils*, Toronto:  
Holt, Rinehart and Winston, 1973. (Content item 2, pp. 92-118)

1871

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# FILM

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## ANNOTATION

## NOTES

HOW SOLID IS ROCK?

C2594

Designed to help students grasp the concept that the earth, when considered over the long span of geologic time, behaves much like a softball. Field evidence, confirmed by laboratory experiments, show that underground rock can both break and flow, even at the same time, when under great pressure and high temperature.

Producer: EBF, 1968

22 min.      color      sound      jrsr      \$5.90



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## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## E8.3 MATTER IN THE UNIVERSE APPEARS TO BE MOVING AT TREMENDOUS VELOCITIES

# PRINT

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### I. Prescribed References for Grade 8

Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough:  
McGraw-Hill, 1976.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976.

### II. Additional Textual Resources for Grade 8

Bishop, M. et al, *Focus on Earth Science*, 2nd edition, Agincourt:  
Charles E. Merrill, 1976. (Content item 1, pp. 497-98; 2, pp.  
444-49)

Harris, M. F. et al, *Investigating the Earth*, Rev. ed., Markham:  
Houghton-Mifflin, 1973. (Content items 1, pp. 436, 458-60;  
2, pp. 436-43)

Hibbs, A. R. and A. F. Eiss, *The Earth--Space Sciences*, Toronto:  
Doubleday Canada, 1971. (Content items 1, pp. 93-107; 2, pp.  
162-65)

Ramsey, W. L. et al, *Modern Earth Science*, Toronto: Holt, Rinehart  
and Winston, 1973. (Content item 2, pp. 2-17, 116-27)

### III. Other Print Resources

Thurber, Walter A. et al, *Exploring Earth Science--Astronomy*, Boston:  
Allyn and Bacon, 1976. (Use for general reference)



# VIDEO

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## ANNOTATION

## NOTES

THE SOLAR SYSTEM: MEASURING ITS                      124021  
DIMENSIONS

An explicit demonstration, principally graphical,  
of the triangulation techniques of measuring  
interstellar distances and the sizes of stellar  
bodies. (AVSB)

Producer: McGraw-Hill, 1973/1978  
10 min.              b/w              sound              jrsr

UNIVERSE    120618

Creates on the screen a vast, awe-inspiring  
picture of the universe as it would appear to  
the voyageur through space. (AVSB)

Producer: National Film Board, 1968/1978  
26 min.              b/w              sound              jrsr





## ANNOTATION

## NOTES

WHO'S OUT THERE?

120135

A portrayal of a contemporary scientific belief that there are intelligent civilizations in the universe. Narrated by Orson Welles. (NASA Group) (AVSB)

Producer: NASA 1976/Perpetual

30 min.      color      sound      jrsr

114

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## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## E8.4 THE OCEANS FORM A LARGE PORTION OF THE EARTH'S SURFACE

# PRINT

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### I. Prescribed References for Grade 8

Heller, R. L. et al, *Challenges to Science: Earth Science*, Scarborough:  
McGraw-Hill, 1976.

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science*,  
Markham: Houghton-Mifflin, 1976.

### II. Additional Textual Resources for Grade 8

Bishop, M. et al, *Focus on Earth Science*, 2nd edition, Agincourt:  
Charles E. Merrill, 1976. (Content items 1, 2, 3, pp. 216-42)

Harris, M. F. et al, *Investigating the Earth*, Rev. ed., Markham:  
Houghton-Mifflin, 1973. (Content items 1 and 2, pp. 212-30)

Hibbs, A. R. and A. F. Eiss, *The Earth--Space Sciences*, Toronto:  
Doubleday Canada, 1971. (Content items 1, 2, 3, pp. 322-36)

Ramsey, W. L. et al, *Modern Earth Science*, Toronto: Holt, Rinehart  
and Winston, 1973. (Content items 1, 2, 3, pp. 296-331)



# VIDEO

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## ANNOTATION

## NOTES

PLANET OF MAN: CHALLENGE OF THE DEEP 201008

A world hungry for mineral resources has turned its search to the oceans. This program focuses on the process of sediment accumulation on ocean floors.

Producer: Ontario Educational Communications  
Authority, 1976/March 1981

Series: Planet of Man

30 min. color sound jrsr





## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT # : \_\_\_\_\_

TITLE

### FORMAT

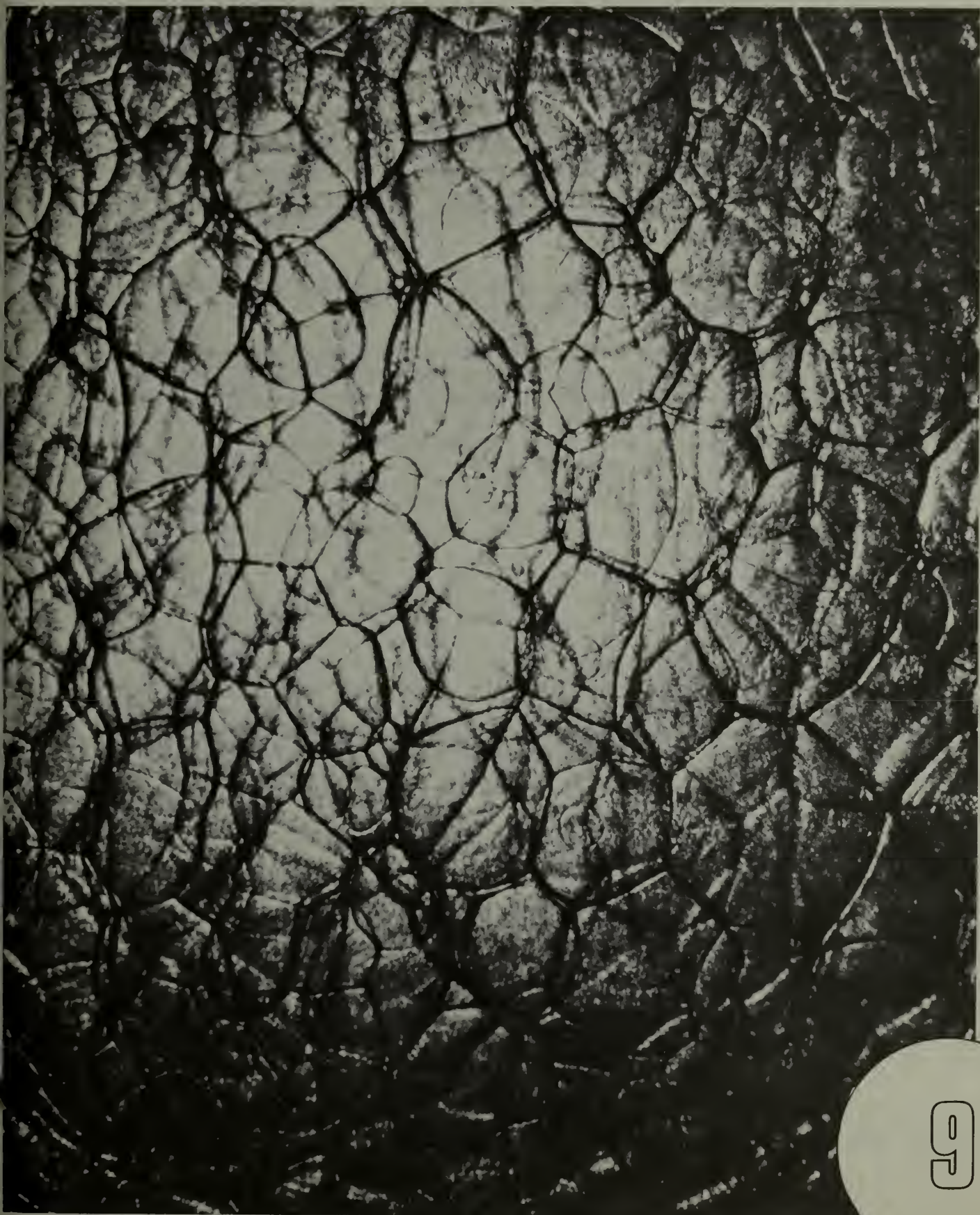
CATALOGUE NO.

SOURCE

[illegible]



# PHYSICAL SCIENCE





## GRADE 9 PHYSICAL SCIENCE PRINT RESOURCES

### Prescribed References

Bickel, C. L. et al, *Physical Science Investigations*, Markham: Houghton-Mifflin, Canada, 1976.

A straightforward presentation of physical science topics that develops the concepts by having students participate in many activities. It follows the program reasonably well and uses metric units although it is not SI. There are some potentially dangerous activities with mercury on pages 42 and 211-215 that should be monitored closely.

Carter, J. L. et al, *Physical Science: A Problem Solving Approach*, Scarborough: Ginn and Co., 1977.

A directed-inquiry approach characterizes this text. Geared to the needs of the average student, the text incorporates clearly outlined experiments and exercises that focus attention on the main purpose of the chapter. The teacher's guide includes suggestions for teaching, for managing the program and a set of transparency masters. It is SI and approved by the Metric Commission.

Heath, R. W. and R. R. MacNaughton, *Physical Science: Interaction of Matter and Energy*, Toronto: D. C. Heath, 1976.

An activity-centered approach to the teaching of physical science that follows the program quite well. The kinetic-molecular theory provides the theme of the book and the science processes structure the laboratory activities. The teacher's guide provides assistance in the laboratory activities highlighting the cautions and the salient points that are to be made in each activity. It is Canadian and SI. There are some potentially hazardous experiments with carbon disulphide (page 67), molten sulphur (pages 88-89) that should only be done as demonstrations.

Townsend, R. D. and P. DeH. Hurd, *Energy, Matter and Change*, Agincourt: Gage and Co., 1973.

A clearly written, colorful text with many demonstrations. There is much more material than can be used and some choice must be made to complete the program. The reading level is a little high and this text is more for the above average student. The accompanying laboratory manual is needed to guide the student through the lab activities. (American and non-SI)

### Additional Textual Resources

These are materials that are available in the market place but for one reason or another are not recommended as prescribed references.

Hill, F. F. and P. B. Barcaski, *Spaceship Earth: Physical Science*, Markham: Houghton-Mifflin, Canada, 1977.

Physical science is related to everyday experiences and concerns of average grade 9 students. It is written in a simple, straightforward style that is very useful in the classroom. The content follows the outline rather poorly, and unfortunately imperial units are freely mixed with metric throughout the text.

Interaction Science Curriculum Project, *Interaction of Matter and Energy*, 2nd edition, Agincourt: Gage Publishing, 1974.

A highly activity-centered approach to the teaching of physical science. The teacher's guide is an invaluable source of ideas and organizational assistance for a student-centered laboratory program.

### Teacher References

In addition to the teacher's guides to the above, the following titles seem suited as resources:

Anderson, H. O. and P. G. Koutnik, *Toward More Effective Science Instruction in Secondary Education*, Don Mills: Collier-Macmillan, 1972.

Joseph, A. et al, *A Sourcebook for the Physical Sciences*, Don Mills: Longman Canada, 1961.

UNESCO, *UNESCO Source Book for Science Teaching*, Revised and enlarged edition, Ottawa: Information Canada, 1962.







CORE

9



## C9.1 MATTER OCCUPIES SPACE AND HAS MASS

# PRINT

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### Prescribed References for Grade 9

Bickel, C. L. et al, *Physical Science Investigations*, Markham:  
Houghton-Mifflin, 1976.

Carter, J. L. et al, *Physical Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977.

Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of  
Matter and Energy*, Toronto: D. C. Heath, 1976.

Townsend, R. D. and DeH. Hurd, *Energy, Matter and Change*, Agincourt:  
Gage and Co., 1973.



# FILM

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## ANNOTATION

## NOTES

### ABOUT TIME

F1576

A survey of the measurement of time from the sun dial to Einstein's theory of relativity. Deals with the construction of the calendar and with the development of clocks, the latest of which is estimated to have a maximum error of one second in 3,000 years. The built-in time mechanisms of plants and animals, the reconstruction of time in the earth's geophysical history and the application of precise timing in communications and scientific research are also discussed.

Producer: Warner, 1961

59 min.      color      sound      jrsrca      \$2.50

### MEASUREMENT OF MAN

B2210

Shows that measurement is description and comparison. Measurement as a communication tool is demonstrated through the recipe in the home and the blueprint in construction. Discussed are a series of scientific and industrial scenes showing measurement as an observation tool, the function of measurement in accurate communication and data recording, the importance of mathematics in measurement, choice of tools, repetition for accuracy, and the importance of precision measurement in science and industry.

Producer: Indiana University, 1965

16 min.      color      sound      ejr      \$3.90





## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]





## C9.2 THE FORMS AND BEHAVIOR OF MATTER CAN BE EXPLAINED BY THE KINETIC MOLECULAR THEORY

# PRINT

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### Prescribed References for Grade 9

Bickel, C. L. et al, *Physical Science Investigations*, Markham:  
Houghton-Mifflin, 1976.

Carter, J. L. et al, *Physical Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977.

Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of  
Matter and Energy*, Toronto: D. C. Heath, 1976.

Townsend, R. D. and DeH. Hurd, *Energy, Matter and Change*, Agincourt:  
Gage and Co., 1973.



## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## C9.3 HEAT AND TEMPERATURE CAN BE EXPLAINED IN TERMS OF MOLECULAR MOTION

# PRINT

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### Prescribed References for Grade 9

Bickel, C. L. et al, *Physical Science Investigations*, Markham:  
Houghton-Mifflin, 1976.

Carter, J. L. et al, *Physical Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977.

Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of  
Matter and Energy*, Toronto: D. C. Heath, 1976.

Townsend, R. D. and DeH. Hurd, *Energy, Matter and Change*, Agincourt:  
Gage and Co., 1973.





# FILM

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## ANNOTATION

## NOTES

MOLECULAR THEORY OF MATTER

A3021

Demonstration of kinetic molecular theory of matter by showing diffusion of gases in air, the condensation of steam, the evaporation of liquids, and transformation of liquids into solids.

Producer: EBF, 19?

11 min.      color      sound      g      \$3.00



## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## C9.4 ENERGY ENABLES WORK TO BE DONE AND MOTION TO BE CHANGED

# PRINT

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### Prescribed References for Grade 9

Bickel, C. L. et al, *Physical Science Investigations*, Markham:  
Houghton-Mifflin, 1976.

Carter, J. L. et al, *Physical Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977.

Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of  
Matter and Energy*, Toronto: D. C. Heath, 1976.

Townsend, R. D. and DeH. Hurd, *Energy, Matter and Change*, Agincourt:  
Gage and Co., 1973.



# FILM

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## ANNOTATION

## NOTES

### ATOMIC ENERGY EXPLAINED

PB27

An outline of atomic energy and its peaceful applications. Studies the structure of atomic particles and shows how energy can be released from them to produce atomic power. Illustrates how radio-isotopes are being put to use in industry and medicine.

Producer: Technical and Scientific Films, 1971  
20 min.      color      sound      jrsrca      \$2.50

### THE ELECTRON'S TALES

PC129

An animated electron's eye view of the history of electronics. Beginning in ancient Greece, he tells of man's discoveries over the years which enabled him to direct and use electron flow from the first battery to the integrated circuit.

Producer: BIS, 1970  
16 min.      color      sound      ejr      \$2.50

### EXPLORING ELECTROMAGNETIC ENERGY

B1606

An introduction to electromagnetic energy and some of the ways in which it is used in daily living. Explains why radio waves, infrared, visible light, ultraviolet, X-rays and gamma rays are all members of the same family.

Producer: Film Associates, 1961  
16 min.      color      sound      jrsrca      \$3.30



ANNOTATIONNOTES

## THE FORCE OF GRAVITY

C1595

The nature of gravitation from early times to the present, as seen by man, is discussed. Tells how the gravitational field accounts for the motion of planets: Newtonian and Einsteinian theories and gravitational problems of the space age.

Producer: McGraw-Hill, 1961

27 min.      color      sound      jrsrca      \$5.70

INTRODUCTION TO THE CATHODE-RAY  
OSCILLOSCOPE

A2888

Demonstrates early experiments leading to the development of the cathode-ray tube. Explains how the tube works to respond to voltages and the various transducers that convert physical phenomena such as sound, light and heat into voltages that can be displayed on the screen.

Producer: EBF, 1970

11 min.      color      sound      jrsr      \$3.00

## MAGNETIC FORCE

C2144

Shows how the magnetic field within the earth controls the path of cosmic ray particles and controls other charged particles that make up the aurora. Reviews present efforts to extend man's knowledge of the magnetic field.

Producer: McGraw-Hill, 1960

27 min.      color      sound      jrsrca      \$3.30

## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE : \_\_\_\_\_ CONCEPT # : \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## C9.5 MATTER IS COMPOSED OF ATOMS AND MOLECULES

# PRINT

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### Prescribed References for Grade 9

Bickel, C. L. et al, *Physical Science Investigations*, Markham:  
Houghton-Mifflin, 1976.

Carter, J. L. et al, *Physical Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977.

Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of  
Matter and Energy*, Toronto: D. C. Heath, 1976.

Townsend, R. D. and DeH. Hurd, *Energy, Matter and Change*, Agincourt:  
Gage and Co., 1973.



# FILM

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## ANNOTATION

## NOTES

### ATOMIC ENERGY EXPLAINED

PB27

An outline of atomic energy and its peaceful applications. Studies the structure of atomic particles and shows how energy can be released from them to produce atomic power. Illustrates how radio-isotopes are being put to use in industry and medicine.

Producer: Technical and Scientific Films, 1971  
20 min.      color      sound      jrsrca      \$2.50

### METAL CRYSTALS IN ACTION

C2345

Shows metal and its composition. Why every phase in modern life and industry depends on metal and how it applies to each phase is demonstrated. The formation and composition of alloys and crystals are also shown.

Producer: American Society for Metals, 19?  
28 min.      color      sound      jrsrca      \$3.60

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## LOCAL RESOURCE LISTING

PLEASE LIST BELOW LOCAL RESOURCES APPLICABLE TO THIS CURRICULUM CONCEPT SECTION

GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

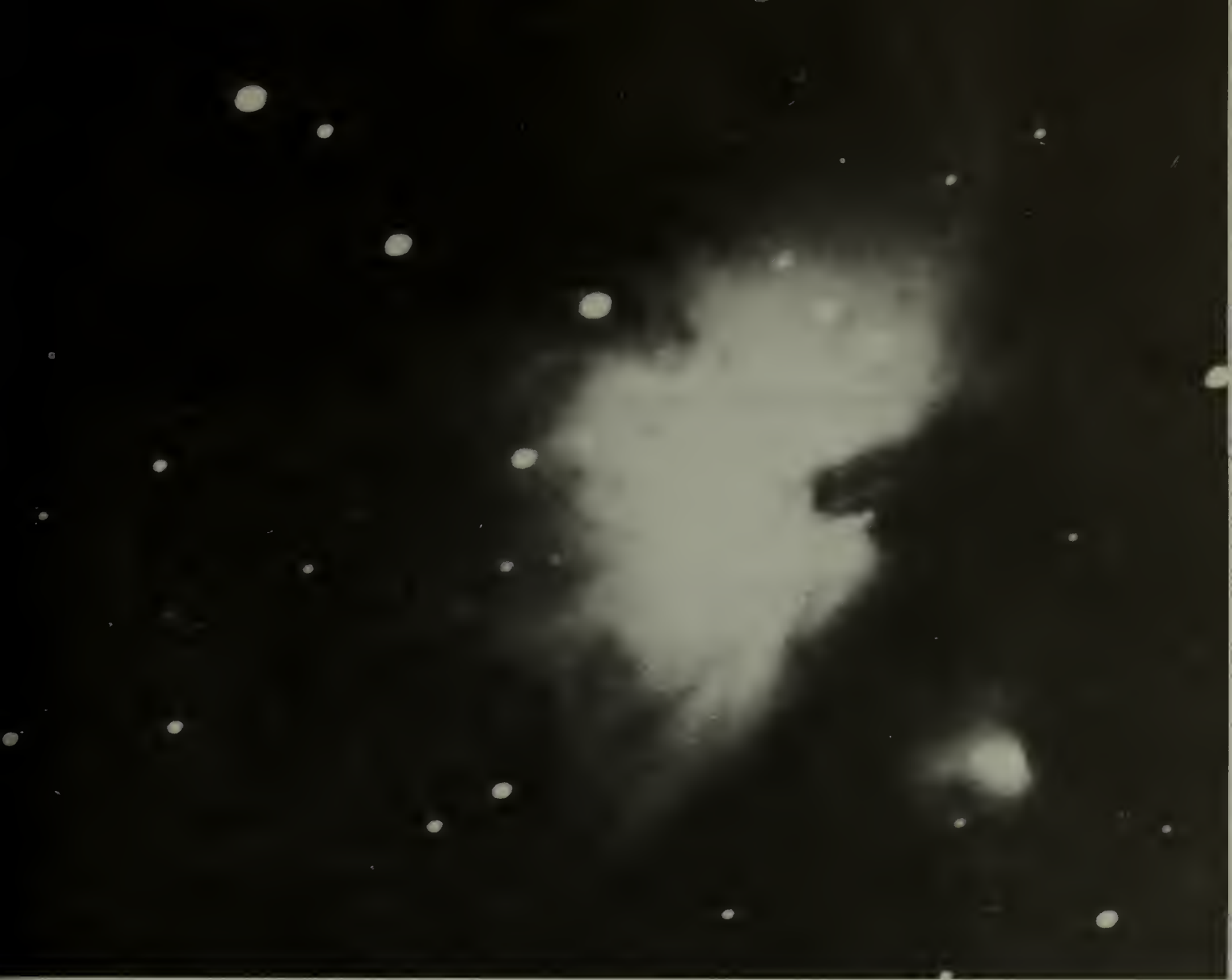
## FORMAT

CATALOGUE NO.

SOURCE

[illegible]





<h1>ELECTIVES</h1>	

# 9



## **E9.1** MANY FORMS OF ENERGY EXIST WHICH CAN BE TRANSFERRED FROM PLACE TO PLACE OR CONVERTED FROM ONE FORM TO ANOTHER

### **E9.1.1** Work Represents a Transfer of Energy (Simple Machines)

# PRINT

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#### I. Prescribed References for Grade 9

- Bickel, C. L. et al, *Physical Science Investigations*, Markham: Houghton-Mifflin, 1976.
- Carter, J. L. et al, *Physical Science: A Problem Solving Approach*, Scarborough: Ginn and Co., 1977.
- Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of Matter and Energy*, Toronto: D. C. Heath, 1976.
- Townsend, R. D. and P. DeH. Hurd, *Energy, Matter and Change*, Agincourt: Gage and Co., 1973.

#### II. Other Print Resources

- Andrews, William A. et al, *Physical Science--An Introductory Study*, Scarborough: Prentice-Hall, 1978. (Content items 1 and 2, pp. 253-69, 310-32)
- Chaplin, Sylvia and John Keighley, *Focus on Physics*, Toronto: Pergamon of Canada, 1977. \$6.50 U.S. (Content items 1 and 2, pp. 113-44)
- Jacobs, Richard P, *Matter and Motion--Physical Science*, New York: Cambridge Book Company, 1976. (Content items 1 and 2, pp. 243-54)
- James, E. O., *Secondary Physics Outlines*, Don Mills: Pergamon of Canada, 1975. (Content items 1 and 2, pp. 26-35)
- Projects in Physics: Man and Machines*, Don Mills: Pergamon of Canada, 1975. 84 pages. (Use for general reference)
- Searching for Structure: Mechanics*, Toronto: Holt, Rinehart and Winston, 1976. 85 pages. (Use for general reference, content items 1 and 2)



## LOCAL RESOURCE LISTING

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GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]





## **E9.1** MANY FORMS OF ENERGY EXIST WHICH CAN BE TRANSFERRED FROM PLACE TO PLACE OR CONVERTED FROM ONE FORM TO ANOTHER

### **E9.1.2** Electrical Energy Can Do Work and Be Changed to Other Forms of Energy

# PRINT

---

#### I. Prescribed References for Grade 9

- Bickel, C. L. et al, *Physical Science Investigations*, Markham: Houghton-Mifflin, 1976.
- Carter, J. L. et al, *Physical Science: A Problem Solving Approach*, Scarborough: Ginn and Co., 1977.
- Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of Matter and Energy*, Toronto: D. C. Heath, 1976.
- Townsend, R. D. and P. DeH. Hurd, *Energy, Matter and Change*, Agincourt: Gage and Co., 1973.

#### II. Other Print Resources

- Chaplin, Sylvia and John Keighley, *Focus on Physics*, Toronto: Pergamon of Canada, 1977. \$6.50 U.S. (Content items 1, 2, 4, pp. 153-208; 3 and 4, pp. 295-328)
- Concepts in Science: Energy--A Physical Science*, New York: Harcourt Brace Jovanovich, 1975. (Content items 1-4, pp. 283-343)
- Investigations in Science--A Modular Approach: Bubbles to Batteries*, Wiley Publishers of Canada, 1974. 86 pages. (Content items 1-4)
- Jacobs, Richard P., *Matter and Motion--Physical Science*, New York: Cambridge Books, 1976. (Use for general reference, lecture approach, pp. 267-76)
- James, E. O., *Secondary Physics Outlines*, Don Mills: Pergamon of Canada, 1975. (Content items 2 and 3, pp. 50-72)
- Projects in Physics: Living With Electricity*, Don Mills: Pergamon of Canada, 1975. 75 pages. (Content items 1-4)
- Searching for Structure: Heat and Magnetism*, Toronto: Holt, Rinehart and Winston, 1975. (Magnetism, pp. 50-87)



## ANNOTATION

## NOTES

ELECTRICAL POWER GENERATION IN SPACE 120123

Shows the power requirements of space exploration. The means of providing power--battery, solar, and fuel cells--are shown. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual  
27 min. color sound jrsr

ELECTRIC PROPULSION 120131

Shows what electric propulsion is, how it works, why it is needed and how it may be used in manned and unmanned missions. (NASA Group) (AVSB)

Producer: NASA 1965/Perpetual  
24 min. color sound jrsr

FIVE MINUTES TO LIVE 120117

This informational tape shows a dramatic example of space technology utilization in the form of Telecare. (NASA Group) (AVSB)

Producer: NASA 1975/Perpetual  
17 min. color sound jrsr



# FILM

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## ANNOTATION

## NOTES

MAGNETIC FORCE

C2144

Shows how the magnetic field within the earth controls the path of cosmic ray particles and controls other charged particles that make up the aurora. Reviews present efforts to extend man's knowledge of the magnetic field.

Producer: McGraw-Hill, 1960

27 min.      color      sound      jrsrca      \$3.30





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GRADE: \_\_\_\_\_ CONCEPT #: \_\_\_\_\_

TITLE

### FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## **E9.1** MANY FORMS OF ENERGY EXIST WHICH CAN BE TRANSFERRED FROM PLACE TO PLACE OR CONVERTED FROM ONE FORM TO ANOTHER

### **E9.1.3** Light Energy Can Do Work and Be Changed to Another Form of Energy

# PRINT

---

#### I. Prescribed References for Grade 9

- Bickel, C. L. et al, *Physical Science Investigations*, Markham: Houghton-Mifflin, 1976.
- Carter, J. L. et al, *Physical Science: A Problem Solving Approach*, Scarborough: Ginn and Co., 1977.
- Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of Matter and Energy*, Toronto: D. C. Heath, 1976.
- Townsend, R. D. and P. DeH. Hurd, *Energy, Matter and Change*, Agincourt: Gage and Co., 1973.

#### II. Additional Textual Resource for Grade 9

- Interaction of Matter and Energy*, 2nd edition, Agincourt: Gage Publishing, 1974. Teacher's Guide. (Content items 2 and 3, pp. 225-60)

#### III. Other Print Resources

- Andrews, William A. et al, *Physical Science--An Introductory Study*, Scarborough: Prentice-Hall, 1978. (Content items 1, 2, 3, pp. 380-438)
- Chaplin, Sylvia and John Keighley, *Focus on Physics*, Toronto: Pergamon of Canada, 1977. \$6.50 U.S. (Content items 1-5, pp. 3-70)
- Concepts in Science: Energy--A Physical Science*, New York: Harcourt Brace Jovanovich, 1975. (Content items 1-5, pp. 386-435)
- Jacobs, Richard P., *Matter and Motion--Physical Science*, New York: Cambridge Book Company, 1976. (Content items 1, 2, 3, pp. 195-238)
- James, E. O., *Secondary Physics Outlines*, Don Mills: Pergamon of Canada, 1975. (Content items 1 and 3, pp. 14-25)
- Searching for Structure: Light and Sound*, Toronto: Holt, Rinehart and Winston, 1975. (Content items 1, 2, 3, and 5, pp. 6-56)



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TITLE

### FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## **E9.1** MANY FORMS OF ENERGY EXIST WHICH CAN BE TRANSFERRED FROM PLACE TO PLACE OR CONVERTED FROM ONE FORM TO ANOTHER

### **E9.1.4** The Energy of Sound Plays a Significant Role in Mankind's Daily Living

# PRINT

---

#### I. Prescribed References for Grade 9

- Bickel, C. L. et al, *Physical Science Investigations*, Markham: Houghton-Mifflin, 1976.
- Carter, J. L. et al, *Physical Science: A Problem Solving Approach*, Scarborough: Ginn and Co., 1977.
- Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of Matter and Energy*, Toronto: D. C. Heath, 1976.
- Townsend, R. D. and P. DeH. Hurd, *Energy, Matter and Change*, Agincourt: Gage and Co., 1973.

#### II. Other Print Resources

- Concepts in Science: Energy--A Physical Science*, New York: Harcourt Brace Jovanovich, 1975. (Content items 1, 2, 3, pp. 346-83)
- Chaplin, Sylvia and John Keighley, *Focus on Physics*, Toronto: Pergamon of Canada, 1977. \$6.50 U.S. (Content items 1, 2, 3, pp. 340-60)
- James, E. O., *Secondary Physics Outlines*, Don Mills: Pergamon of Canada, 1975. (Content item 1, pp. 46-49)
- Searching for Structure: Light and Sound*, Toronto: Holt, Rinehart and Winston, 1975. (Content items 1, 2, and some of 3, pp. 58-87)





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TITLE

## FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## E9.2 LIQUID PRESSURE CAN BE USED TO REDUCE THE FORCE REQUIRED TO MOVE AN OBJECT

# PRINT

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### I. Prescribed References for Grade 9

- Bickel, C. L. et al, *Physical Science Investigations*, Markham: Houghton-Mifflin, 1976.
- Carter, J. L. et al, *Physical Science: A Problem Solving Approach*, Scarborough: Ginn and Co., 1977.
- Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of Matter and Energy*, Toronto: D. C. Heath, 1976.
- Townsend, R. D. and P. DeH. Hurd, *Energy, Matter and Change*, Agincourt: Gage and Co., 1973.

### II. Other Print Resources

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- Chaplin, Sylvia and John Keighley, *Focus on Physics*, Toronto: Pergamon of Canada, 1977. \$6.50 U.S. (Content items 1, pp. 105-12; 2, pp. 84-94)
- Concepts in Science, Energy--A Physical Science*, New York: Harcourt Brace Jovanovich, 1975. (Content item 1, pp. 211-26)
- Hogg, John C. and Judson B. Cross, *Basic Physical Science*, Toronto: Van Nostrand, 1960. May be out of print, but available in many schools. (Content items 1 and 2, pp. 61-80)
- Jacobs, Richard P., *Matter and Motion--Physical Science*, New York: Cambridge Book Company, 1976. (Content items 1 and 2, pp. 31-37)
- James, E. O., *Secondary Physics Outlines*, Don Mills: Pergamon of Canada, 1975. (Content items 1 and 2, pp. 36-41)



## ANNOTATION

## NOTES

AUTOMOBILE TIRE HYDROPLANING: 120128  
WHAT HAPPENS

Shows how and why automobile tires lose contact with wet pavements and relationship between speed, tire wear, and water depth. The dangers of hydroplaning are emphasized. Recommended for driver training. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual  
12 min. color sound jrsr





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TITLE

### FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## E9.3 LATENT HEAT ACCOUNTS FOR THE ENERGY REQUIRED TO CAUSE A CHANGE IN THE STATE OF A SUBSTANCE

# PRINT

---

### I. Prescribed References for Grade 9

- Bickel, C. L. et al, *Physical Science Investigations*, Markham:  
Houghton-Mifflin, 1976.
- Carter, J. L. et al, *Physical Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977.
- Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of  
Matter and Energy*, Toronto: D. C. Heath, 1976.
- Townsend, R. D. and P. DeH. Hurd, *Energy, Matter and Change*, Agincourt:  
Gage and Co., 1973.

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Scarborough: Prentice-Hall, 1978. (Content items 1 and 2, pp.  
363-69)
- Chaplin, Sylvia and John Keighley, *Focus on Physics*, Toronto:  
Pergamon of Canada Ltd., 1977. (Content items 1, 2 and more,  
pp. 258-69)
- Concepts in Science, Energy--A Physical Science*, New York: Harcourt  
Brace Jovanovich, 1975. \$6.50 U.S. (Content items 1 and 2,  
pp. 257-58)

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## **E9.1** MANY FORMS OF ENERGY EXIST WHICH CAN BE TRANSFERRED FROM PLACE TO PLACE OR CONVERTED FROM ONE FORM TO ANOTHER

### **E9.1.3** Light Energy Can Do Work and Be Changed to Another Form of Energy

# PRINT

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#### I. Prescribed References for Grade 9

- Bickel, C. L. et al, *Physical Science Investigations*, Markham: Houghton-Mifflin, 1976.
- Carter, J. L. et al, *Physical Science: A Problem Solving Approach*, Scarborough: Ginn and Co., 1977.
- Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of Matter and Energy*, Toronto: D. C. Heath, 1976.
- Townsend, R. D. and P. DeH. Hurd, *Energy, Matter and Change*, Agincourt: Gage and Co., 1973.

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- Chaplin, Sylvia and John Keighley, *Focus on Physics*, Toronto: Pergamon of Canada, 1977. \$6.50 U.S. (Content items 1-5, pp. 3-70)
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- Jacobs, Richard P., *Matter and Motion--Physical Science*, New York: Cambridge Book Company, 1976. (Content items 1, 2, 3, pp. 195-238)
- James, E. O., *Secondary Physics Outlines*, Don Mills: Pergamon of Canada, 1975. (Content items 1 and 3, pp. 14-25)
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TITLE

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CATALOGUE NO.

SOURCE

[illegible]





## **E9.1** MANY FORMS OF ENERGY EXIST WHICH CAN BE TRANSFERRED FROM PLACE TO PLACE OR CONVERTED FROM ONE FORM TO ANOTHER

### **E9.1.4** The Energy of Sound Plays a Significant Role in Mankind's Daily Living

# PRINT

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#### I. Prescribed References for Grade 9

- Bickel, C. L. et al, *Physical Science Investigations*, Markham: Houghton-Mifflin, 1976.
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- James, E. O., *Secondary Physics Outlines*, Don Mills: Pergamon of Canada, 1975. (Content item 1, pp. 46-49)
- Searching for Structure: Light and Sound*, Toronto: Holt, Rinehart and Winston, 1975. (Content items 1, 2, and some of 3, pp. 58-87)



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TITLE

### FORMAT

CATALOGUE NO.

SOURCE

[illegible]



## E9.2 LIQUID PRESSURE CAN BE USED TO REDUCE THE FORCE REQUIRED TO MOVE AN OBJECT

# PRINT

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### I. Prescribed References for Grade 9

- Bickel, C. L. et al, *Physical Science Investigations*, Markham: Houghton-Mifflin, 1976.
- Carter, J. L. et al, *Physical Science: A Problem Solving Approach*, Scarborough: Ginn and Co., 1977.
- Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of Matter and Energy*, Toronto: D. C. Heath, 1976.
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- Concepts in Science, Energy--A Physical Science*, New York: Harcourt Brace Jovanovich, 1975. (Content item 1, pp. 211-26)
- Hogg, John C. and Judson B. Cross, *Basic Physical Science*, Toronto: Van Nostrand, 1960. May be out of print, but available in many schools. (Content items 1 and 2, pp. 61-80)
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- James, E. O., *Secondary Physics Outlines*, Don Mills: Pergamon of Canada, 1975. (Content items 1 and 2, pp. 36-41)





## ANNOTATION

## NOTES

AUTOMOBILE TIRE HYDROPLANING: 120128  
WHAT HAPPENS

Shows how and why automobile tires lose contact with wet pavements and relationship between speed, tire wear, and water depth. The dangers of hydroplaning are emphasized. Recommended for driver training. (NASA Group) (AVSB)

Producer: NASA 1967/Perpetual  
12 min. color sound jrsr



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TITLE

## FORMAT

CATALOGUE NO.

## SOURCE

[illegible]



## E9.3 LATENT HEAT ACCOUNTS FOR THE ENERGY REQUIRED TO CAUSE A CHANGE IN THE STATE OF A SUBSTANCE

# PRINT

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### I. Prescribed References for Grade 9

- Bickel, C. L. et al, *Physical Science Investigations*, Markham:  
Houghton-Mifflin, 1976.
- Carter, J. L. et al, *Physical Science: A Problem Solving Approach*,  
Scarborough: Ginn and Co., 1977.
- Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction of  
Matter and Energy*, Toronto: D. C. Heath, 1976.
- Townsend, R. D. and P. DeH. Hurd, *Energy, Matter and Change*, Agincourt:  
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### II. Additional Textual Resources for Grade 9

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363-69)
- Chaplin, Sylvia and John Keighley, *Focus on Physics*, Toronto:  
Pergamon of Canada Ltd., 1977. (Content items 1, 2 and more,  
pp. 258-69)
- Concepts in Science, Energy--A Physical Science*, New York: Harcourt  
Brace Jovanovich, 1975. \$6.50 U.S. (Content items 1 and 2,  
pp. 257-58)



# FILM

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## ANNOTATION

## NOTES

MOLECULAR THEORY OF MATTER

A3021

Demonstration of kinetic molecular theory of matter by showing diffusion of gases in air, the condensation of steam, the evaporation of liquids, and transformation of liquids into solids.

Producer: EBF, 19?

11 min.      color      sound      g      \$3.00





## LOCAL RESOURCE LISTING

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